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ABSTRACT

Classroom variables and student track levels were studied to determine the impact of tracking and the resulting differences in student educational experiences. A secondary analysis of nationwide data collected for "A Study of Schooling" was used in an analysis of the classroom experiences of students in 297 secondary school English and mathematics classes. The investigation focused on how track levels differed in three major aspects of daily classroom life (curricular content, instructional practice, social relationships and interactions) and in selected student attitudes. Tracked classes were compared with heterogeneous classes on the same dimensions. An uneven racial distribution was found among tracks, particularly in schools where minority students were poor. The data analysis indicated that education in the schools studied was not available to all on an equal basis. Low track students were least likely to experience the quantity and quality of instruction associated with achievement. Teacher student relationships and other classroom interactions in low track classes focused on punitive and negative expressions, with low levels of peer esteem and high levels of class dissonance. Although low track students were as satisfied with their schools as their high track peers, they had the lowest self esteem, leading to the supposition that school processes contribute to societal inequalities. Heterogeneous classes were considerably more advantaged in terms of classroom content and processes than many of the average and nearly all of the low track classes, further supporting the theory of cultural reproduction. Sixty tables present study results, distributions, and classifications, and appendices present classroom learning environment scales, supplementary findings, and the degree of student satisfaction in the four samples. (FG)

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A QUESTION OF ACCESS: TRACKING AND CURRICULUM DIFFERENTIATION IN A NATIONAL SAMPLE OF ENGLISH AND MATHEMATICS CLASSES*

Jeannie Oakes

Technical Report No. 24

1981

A Study of Schooling is based upon the assumption that improving schools requires knowing what is happening in and around them. A comprehensive data-base of contextual information was obtained from students, teachers, administrators, parents and observers at all grade levels in thirty-eight elementary and secondary purposively sampled schools. *It is strongly recommended that readers of any technical report in this series first read Technical Report No. 1 which outlines the details, scope and limitations of the Study as a whole.*

It must be understood that this series of technical reports does not constitute the Study. Some reports are highly specific "molecular" inquiries while others take a more "molar" view across data sources, schooling levels, etc. Some reports are more methodological in nature arising out of issues in data analysis. Many of the reports quite naturally overlap in data analysed and interpretations rendered. Some authors have approached their task as consisting mostly of data description with little discussion beyond the presentation of the data. Others have ventured further into the realm of interpretation and speculation. *It must be further understood that data-based inferences can and do differ among researchers who come at the data from differing points-of-view.* Authors, therefore, are duly acknowledged for each report and are responsible for the material presented therein.

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CHAPTER I

TRACKING IN AMERICAN SECONDARY SCHOOLS:
THE CONTEXT OF THE STUDY

Tracking—the process of identifying and grouping together school children who appear to have similar learning aptitudes or academic accomplishments for the purpose of providing them a differentiated course of instruction--has been an organizational practice in American schools during the last seventy years. The practice developed in response to both the increased diversity in student populations following the great influx of immigrants in the late nineteenth century and the institution of compulsory education laws which followed soon thereafter.

Before 1900, secondary school populations were quite similar and the function of the public school was to provide a common educational experience. Throughout the nineteenth century a shared curriculum was characteristic of schools. In 1900, only eleven percent of America's youth attended high schools, and two-thirds of this group were preparing for college (Coleman, 1966). With the movement toward universal secondary education and the comprehensive high school, however, secondary school populations became highly diverse as they increased in size. Tracking was viewed as a mechanism to assist the school in providing effective programs for this newly diverse student population.

At the same time, pressures from elsewhere in society were brought to bear on schools urging them to become "business-like" and efficient and to utilize "scientific" approaches to these ends (Callahan, 1962). The classifying of students and sorting them into programs based on seemingly objective and scientific measures—standardized group tests of intellectual performance—seemed to meet both the need for effective programs and for efficient methods. As a result, tracking became a widespread feature of secondary education.

The major theoretical purposes of tracking have been to better meet the different needs of various groups of students and to maximize individual learning within the group. The practical aim has been to reduce the range of individual differences in class groups to simplify the teaching task (NEA, 1968). Widely accepted by educators has been the assumption that individual differences can best be served in classes where students share similar characteristics.

The separation of students into tracks has been questioned, however, both in recent educational studies of equal opportunity and by the courts. Following the Brown v. Topeka Board of Education (347 U.S. 483) decision of 1954 and the court's clear commitment to the tenet that public education "must be made available to all on equal terms," increased scholarly attention has focused on sources of educational inequality at all levels. Coleman's (1966), Jencks' (1972), and Smith's (1972) analyses of the Equality of Educational Opportunity data make it clear that greater variation in pupil outcomes exists within the same school than exists between schools. One implication of this work is that inequality in American education is far more likely to result from the ways the same school treats different children rather than from differences between schools. Tracking, perhaps the primary vehicle for providing different educational programs for students within schools, has thus become a major focus of inquiry into the sources of educational inequality within schools.

Despite the pervasiveness of tracking in American education, however, and the numerous investigations of schooling outcomes related to it, the process and content of tracking have remained relatively unstudied. Little is known about the differences in the daily classroom life of students in different tracks and how these differences may contribute to educational inequity within schools.

The cumulative results of three lines of research point to the importance of a tracking study which focuses on these daily classroom processes: 1) studies of the relationship between tracking and academic achievement, 2) studies of the relationship between tracking and student outcomes in the affective domain, and 3) studies of the relationship between tracking and the racial and socioeconomic separation of students within schools. An examination of these groups of studies, taken together, implicates tracking in the failure of schools to provide educational equity to students from poor and minority groups. Thus, the processes that take place in classes at different track levels within schools become important in determining whether, and in what ways, different groups of students in the schools may not be equally served.

The considerable amount of existing research on the relationship between tracking and academic achievement has not demonstrated that this type of grouping and, presumably, the differential treatment that accompanies it have led to gains in student achievement for students at all ability levels. (Excellent recent reviews of this literature include the following: Heathers (1969), Findley and Bryan (1970), Espositio (1971), and Persell (1976).) In addition, a number of these and other studies have shown that tracking has had negative effects on students in average and lower groups with the most adverse effects on those students at the bottom levels (see Borg, 1966; Findley and Bryan, 1970 for excellent reviews of this literature). Rosenbaum (1976), for example, studied the effects of tracking on I.Q. scores longitudinally and found that test scores of students in low tracks became homogenized with a lower mean score over time. In contrast, students' scores in higher tracks became increasingly differentiated with a higher mean score over time. Additionally, in a recent study of tracking and educational outcomes, Alexander, Cook, and McDill (1978) found that, even with ability and ninth grade achievement controlled, track placement affected eleventh grade achievement with students in college tracks experiencing greater gains than those in non-college preparatory programs.

In the area of affective outcomes, Shafer and Olexa (1971) found more school misconduct and higher dropout and delinquency rates among students in lower tracks, even with the social class of students held constant. Kelly (1975) found track position directly related to self-esteem with lower track students scoring lowest on self-esteem measures. Moreover, Kelly and others (Shafer and Olexa, 1971;

Alexander and McDill, 1976) have shown that placement in lower tracks has had a corroding effect on students' self-esteem. Heyns (1974) found that, even with ability level and status origins controlled for, track level was an important determinant of future educational plans, a finding confirmed by Alexander and McDill (1976). The more recent work of Alexander, Cook, and McDill (1978) expands these findings to establish the existence of tracking effects not only on educational aspirations but on goal-oriented behavior as well. Controlling for pre-track enrollment achievement, goals, and encouragement from others, the study found those in college tracks to be more likely than students in other programs to apply for college admission and have an enhanced probability of acceptance. Rosenbaum's recent study of track misperceptions (1980) supports this work with the findings that low track membership has a frustrating effect on students' college plans over and above the effects of aptitude and grades. (See Findley and Bryan, 1970 for an extensive review of earlier studies on grouping and effective outcomes.)

These research findings on the negative relationships between tracking and student achievement and affective outcomes take on a special significance in view of work that has demonstrated that tracking in schools functions to separate students along socioeconomic and racial lines. While there is considerable controversy in the literature about the relative contribution of ascriptive and achieved characteristics to student classification (Rehberg and Rosenthal, 1978) and about the neutrality or objectivity of placement criteria (Mercer, 1974; Kirp, 1974), studies have consistently found high correlations between race and socioeconomic status and track level (Mehl, 1965; Hobson v. Hansen, 1967; Heathers, 1969; Shafer and Olexa, 1971; Heyns, 1974; Rosenbaum, 1976; Morgan, 1977 among others). Other studies have found that socioeconomic or racial characteristics of students have a considerable influence on the track placement decisions made about them. (Alexander and Eckland, 1975; Hauser et. al., 1976; Alexander and McDill, 1976; Metz, 1978.)

Some recent work has argued that the effects of socioeconomic status and race on track placement are almost entirely mediated through ability, aspirations, and parental expectations (Alexander, Cook, and McDill, 1978; Rehberg and Rosenthal, 1978; Davis, 1980). Nevertheless, all of these findings implicate tracking in the consideration of educational inequity for poor and minority students in that minority children and those from the lowest socioeconomic groups have been found in disproportionate numbers in classes at the lowest track levels and children from upper socioeconomic levels have been found to be consistently over-represented in higher tracks.

Additionally, when tracking has been considered by the courts in cases involving racially and socioeconomically diverse school settings, it has often been found to be a discriminatory denial of equal educational opportunity. The Equal Protection clause of the Fourteenth Ammendment has been the tool in these cases that have adjudicated the constitutionality of tracking. In several school desegregation cases, classifications of students based on measures of academic aptitude have been treated as "suspect"--those which A) result from congenital and immutable characteristics over which one has no control, B) have a stigmatizing effect resulting in psychic injury and C) involve a discrete and insular minority, a politically defenseless group which may need the protection of the court against majority supression (Dick, 1974). Based on the assumption that academic aptitude is randomly distributed in the population, the courts have determined that classifications, purportedly based on this neutral criterion, that, in fact, allocate racial and socioeconomic groups to different classes in disproportionate numbers, can be a denial of equal protection and, therefore, a barrier to equal educational opportunity. The ruling, in many of these cases, has been that tracking or classification of students with measures or criteria that result in disproportionate racial groupings are discriminatory and, therefore, unconstitutional (e.g., Hobson v. Hansen 269 F Supp. 401, 1969; Moses v. Washington Parrish School Board 409 U.S. 1013, 1972; McNeal v. Tate County School District 508 52d 1017, 1975; Read v. Rhodes 455 F Supp. 569, 1978; and Larry P. v. Riles, 343 F Supp. 1306, 1972; 9th District Court Slip Opinion, 1979).

While it is clear that students differ in socioeconomic and cultural characteristics and in aptitudes which influence their learning, it is unlikely that these attributes alone account for the measured differences in cognitive, affective and I.Q. outcomes associated with them. (Deutch and Brown, 1964; McCandless, 1967, among others). Much of the research on tracking and student outcomes has controlled for these background and ability factors. In addition, while not dealing with tracking specifically, other work has focused on the different effects of various teacher behaviors and instructional approaches on students with similar characteristics and learning needs. Many of the teacher expectation studies have shown differential outcomes for students with similar characteristics resulting from teacher behaviors modified by differing expectations for them (see Persell (1976) for a comprehensive review of this literature). Moreover, Morgan (1977), in one of the few studies comparing treatment effects at track levels, found that teachers employing different strategies with students at the same track level achieved considerably different results in student outcomes. It seems evident, then, that the impact of tracking itself and the resulting differences in the educational experiences of students at different track levels are partially responsible for differences in student outcomes.

Why another study on tracking? Most studies to date have focused on the relationship between tracking and outcome variables. Little work, however, has investigated differences in the actual classroom processes that occur in classes at various track levels or contrasted these processes with those occurring in heterogeneous groupings. It seems likely, in view of the differences in student outcomes associated with tracking, that differences in curricular content, instructional practices, social relationships and interactions exist among classes that are grouped differently. An exploration of these possible differences and an analysis of their content should provide insight into the processes in schools which contribute to differential student outcomes. Additionally, some studies have suggested that the racial and socioeconomic separation in schools through tracking may foster inequality by functioning to maintain class stratification in society (Heathers, 1969; Shafer and Olexa, 1971; Carnoy, 1974; Rosenbaum, 1976). This work, however, has not investigated how the actual experiences in classrooms may contribute toward this end.

The purpose of this study, then, was to explore the day-to-day educational experiences of students in classes that are tracked and in those classes that are heterogeneously grouped. This investigation focused on three major aspects of the classroom experience at different track levels in secondary English/language arts and math classes: curricular content, instructional practices, and social relationships and interactions. It was expected that, in the examination of the relationships between these classroom variables and track level, patterns would emerge indicating that distinct differences exist among classes at various track levels. A set of theoretical propositions was used to guide the formulation of research questions and as a base from which to interpret findings. In this way, an understanding of how classes may differ across track levels was provided and, in addition, an explanation of how these differences may relate to both educational and societal inequality could be made.

Secondary language arts and math classes seem especially appropriate for investigating relationships between tracking and classroom processes as students participate in these classes throughout most of their secondary school years and as these classes are frequently tracked. In addition, an important reason for focusing on language arts and math classes is that the degree and type of verbal and quantitative knowledge and skills acquired in school are often used as a basis for academic, social, and economic discrimination between individuals (see, for example, Rist, 1970; Fox, 1973; Bikson, 1974; Wolfram and Fashold, 1974).

CHAPTER II

TRACKING AND CLASSROOM EXPERIENCES: THE EXISTING LITERATURE

In 1970 Findley and Bryan, as a part of their extensive literature review on ability grouping, indicated that there had been no studies to date that measured the curricular practices, programs, pace, or methodology in classes at different track levels (Findley and Bryan, 1970). Since that time, however, some ethnographic studies and small scale investigations have looked at teaching and learning processes in tracked classes.

Nell Keddie, in an ethnographic study reported in Michael Young's volume Knowledge and Control (Keddie, 1971), investigated the differentiated curriculum which results from tracking students. Keddie collected data using observation, tape recordings, and questionnaires about approximately twelve teachers in a humanities program in a large streamed (tracked) British comprehensive school. Students were placed in one of three streams--A, B, or C--with A stream students those judged to be at the highest ability level. Keddie found, however, that lower class students were streamed, for the most part, into the lowest ability groups. Teachers identified most strongly with students in the highest stream, believing that these students were more like themselves. Furthermore, Keddie observed that teachers not only viewed students in the lowest stream as different from themselves, but also as more difficult, both in terms of their behavioral expectations and in their preparation of instructional materials. This view of C stream students as different stemmed, in Keddie's interpretation, from their violation of teachers' norms of "appropriate social, moral, and intellectual behavior" (p. 134). Keddie posits that these violations occurred when students in lower ability groups failed to work quickly and to work autonomously and when teachers experienced difficulty in maintaining social control with them.

Keddie found that, as a result of viewing lower stream students as problematic, teachers behaved differently with them in class in a number of ways. Identical questions, such as "Why should we do social science?" were interpreted as having different meanings when asked by students from different streams. The question was considered a legitimate inquiry when asked by upper stream students; but if asked by a student from a lower ability group, the question was viewed by teachers as having the same meaning as "Why do anything? Why work?" (p. 140). Additionally, teachers allowed considerably more noise and required substantially less work from students in the low stream. Instructional material was categorized by teachers as more appropriate for some streams than others. Material that was considered abstract or seen by teachers as "intellectual" was deemed appropriate only for upper stream students. Students in the lower stream were viewed as needing material that was more concrete or experiential or that included illustrative stories. Keddie cited one teacher who differentiated instructional material on economics among streams by emphasizing how to fill out tax forms with the lower ability group and stressing how different methods of taxation work and the differences between direct and indirect taxation with the higher ability group. While Keddie noted that there were substantive differences between A and C stream students, she contended that the differences among students are open to a number of interpretations other than those made by the teachers she studied. Keddie viewed the most important difference to be that A students tended more than C students to accept the structure of the course as teachers defined it and to use the same terminology as did their teachers. C students, in contrast, appeared to be more skeptical, leading them to question the structure and basic assumptions of the course. Keddie, however, did not observe that students in the higher stream had either an understanding of the structure of a subject or a grasp of its rationale as the teachers she studied assumed. Those students seen as the most able, Keddie concluded, may, in fact, be those "who have access to or are willing to take over the teachers' definition of the situation" (p. 150). Keddie saw this as most likely to be achieved by middle-class students. Keddie concluded that the implication of this differential distribution of teacher expectations and instructional content is that some types of knowledge and methods of inquiry are made available to some students in schools, but not to others. Additionally, Keddie noted that this differential access is closely related to social class as a result of the disproportionate allocation of children from upper and middle classes to high ability groups and those from lower class backgrounds to low ability groups.

Because Keddie's work was limited to a small group of teachers and their classes at a single school, it is not possible to generalize her conclusions to a larger population of schools that employ tracking systems. Keddie's study is significant, however, in that it was the first to examine in a systematic way the differences in the instructional content and processes which take place in classes at different track levels. As such, this study raised important new questions about how these different contents and processes may produce differential socialization among children from different social classes.

Jerome Freiberg's pilot study, "The Effects of Ability Grouping on Interaction in the Classroom" (1971), examined how teacher-student interactions differed in history classes at different track levels. Freiberg observed two classes each of two history teachers with identical grades and track levels in a secondary school that grouped students by ability in grades seven through twelve. Each teacher's ability groups were observed four times during the fall semester of 1970. Flanders Interaction Analysis system was used to measure classroom interactions during the observation periods. Frequency distributions and chi-square statistics were used to describe differences between the two teachers' classrooms and between each teacher's classrooms at different track levels.

Freiberg found that in the upper tracks students received more empathy, praise and recognition of their ideas than did students in lower tracks. Additionally, upper track classes received less direction and criticism than lower track classes. From this pilot study, Freiberg hypothesized that the following variables might be important in determining differences between tracks: proportion of teacher to student talk, types of motivation used by teachers, types of behavior reinforced by teachers, and the extent to which the class is motivated by content (Freiberg, 1971). Unfortunately, because of the limited nature of Freiberg's inquiry, in both sample size and variables considered, it can only hint at the differences which may exist between groups.

More recently, Mary Haywood Metz, in her ethnographic account of two desegregated junior high schools, Classrooms and Corridors (1978), included more detailed descriptions of classroom processes and student perceptions in classes at different track levels, than did either Keddie or Freiberg. Using participant-observation, interviewing, and content analysis of school documents, Metz systematically studied all of the eighth grade classes, teachers, and administrators at the two schools. Though Metz's primary interest was to discover patterns of authority and control in a variety of classes, some insightful observations were made about curriculum, teaching practices, and classroom interactions as they related to the authority issue. Students at the two schools were assigned to five ability tracks. Metz discovered that teachers consistently altered their expectations when working with different track levels and that these different expectations led to adaptations in teaching behaviors. Metz noted the following, for example:

> With all teachers there was a certain air of intensity in the top level classes. The children were expected to pay close attention at all times except during administrative lulls such as the passing back of papers. The pace of activity was brisk; teachers would discourage any quiet whispering or even silent

> inattention as soon as they noticed it. In general, the students did, in fact, pay good attention and engaged in little non-academic byplay.
>
> In the lower level classes, the atmosphere was in one sense more relaxed. The pace of activity was slower and there was considerably more inattention, conversation, and often even movement about the room. The teachers would reprimand the perpetrators of these activities if they were prolonged or especially disruptive, but they did not attempt to eliminate them altogether as they did in the top level classes.
>
> However, in another sense the top level classes were the more relaxed. A child who engaged in some physical activity such as throwing spitballs would be mildly told to stop; one who made an angry outburst or mocking comment at the teacher might be only coldly ignored. But in the bottom level classes overt teasing of others or disrespectful comments toward the teacher were treated far more peremptorily and severely. (pp. 105-106)

Additionally, Metz found that teachers used more individual, structured, and written work (silent reading, worksheets, etc.) with low track classes and less use of oral work and class discussion.

Metz found differences in the goals and values of students in the various tracks. Students in the high tracks were more likely to question the teacher both in regard to educational goals and in interpretation of material or test answers. Students in lower tracks, on the other hand

> .....did not have a developed normative definition of the way schools should be run. Rather, they took the school as they found it and did not question the administrator's and teacher's right to define what they should learn, how they should learn it, or how they should behave. However, though they accepted these definitions as inevitable, they did not embrace them. They frequently failed or refused to cooperate in the activities the definitions implied. They did not question the school's proper character, but they held themselves apart from it. They remained alien and separate within it. (p. 81)

Regarding student perceptions, Metz found lower track students to be less involved and committed to class activity, more passive and accepting of teacher authoritarianism and the norm of unquestioned obedience, even though they were more boisterous in their behavior than upper track students. It is intriguing to note the differing, if not directly conflicting, interpretations of low track student behavior of Metz and Keddie. It is difficult, because of the few descriptions of actual behavior in Keddie's report, to determine whether there were differences in behavior between the low track students in the two studies or whether similar behaviors were interpreted differently by the two researchers.

Although her descriptions are very illuminating, Metz limited her analysis to teacher/student authority relationships and how they differed in a variety of classes. Additionally, however, Metz reported the overwhelmingly disproportionate number of Black students in lower tracks. Unfortunately, Metz did not relate these findings about the substantially different learning environments for different groups of students to the problem of educational inequality. Neither did she provide any theoretical explanations as to why these differences in the schools she observed were accepted and maintained.

In, perhaps, the only research, to date, directly linking actual classroom experiences at different track levels and inequality, Edward Morgan, in his study Inquality in Classroom Learning: Schooling and Democratic Citizenship (1977), investigated whether some groups of students in schools encounter learning situations which are more democratic than others. Morgan studied a total of fifteen social studies classes at three track levels in three high schools using observation, interviews, and questionnaires to gather data. Morgan found that students in lower tracks at all three schools consistently experienced less democratic classroom environments as measured by their participation and involvement in the learning experience. Morgan found students in higher tracks to be more involved, more interested, and less alienated than students in lower tracks. Student participation was measured by questionnaire items and scales regarding their perceptions of how interesting and boring their class was, their estimates of their chances to learn about things that interest them, their perceptions of their opportunities to speak in class, whether they considered the class a challenge, and how much influence they felt they had over classroom activities. Morgan found noticible differences on all of the variables except "chance to speak" and the influence dimension. From these different student perceptions, Morgan concluded that substantial inequality in learning participation existed among different track levels. Student involvement was measured by questionnaire items measuring feelings of alienation, confinement, boredom, and attentiveness. Mean scores of students in lower tracks were considerably higher on the first three dimensions and substantially lower on the fourth.

These differences in participation and involvement were seen as stemming from the observed tendency of teachers in higher track classes to manage classes in a more active style--characterized by less teacher domination and student passivity--and to present a more open curriculum--including content subject to personal interpretation by students.

Low track classes, on the other hand, were characterized by greater teacher domination of classroom interactions and fewer provisions for divergent responses from students.

These levels of participation were accompanied by vastly different student perceptions of teacher control, discipline, and authority as well. Low track students were more likely to agree to classify discipline procedures as harsh and less likely to feel personal freedom in class. High track students, in contrast, were least likely to hold these views. Low track students were less likely to report class grading procedures as fair. Morgan concluded from these student perceptions that

> .....classroom control tends to follow a steplike progression from less democratic characteristics in low track classes to more democratic traits in high-track classes. Honors students are less overtly controlled and less teacher dominated, feel more free to be themselves, perceive classroom discipline as more relaxed and the teacher as more worth listening to, and feel classroom control is exercised fairly. General track (low-track) students tend toward the opposite views, while perceptions of college track (middle) students lie in between. (p. 92)

Because these differences were tied so closely to track level in the classes he studied, Morgan asserted, "the most striking pattern of classroom learning corresponds to a student's track assignment, not to the particular school a student attends, or the student's grade level, or the particular teacher he encounters" (p. 64). Furthermore, because of the nature of the variation in the learning environments--their relatively democratic or undemocratic character--Morgan concluded that these track level differences constituted the most systematic inequality in public schooling. Because of the correlation in his study between track level and student socioeconomic status, Morgan also concluded that this within-school inequality leads to the denial of equal opportunity to lower socioeconomic groups (Morgan, 1977).

These four investigations of classroom experiences at different track levels are enlightening in that they begin to point to the type of track level differences in specific areas which should be investigated further. Their limited scope, however, prohibits conclusive statements about the content, extent, or direction of differences which extend across a variety of types of schools. All four studies were conducted at a small number of schools--Morgan's has the largest sample with three schools and fifteen classes. Additionally, each study focuses on only a limited range of classroom processes: Keddie's primarily on access to knowledge, Freiberg's on teachers interactions with students, Metz's on authority and control mechanisms, and Morgan's on the democratic quality of classroom environments. It seems clear that a more comprehensive study of tracking and classroom process is called for, both in the number and types of schools and classes studied and in the range of classroom processes explored. This extensive investigation is needed to gain a more complete picture of how tracking may influence the day-to-day schooling experiences of children and, importantly, to understand how different experiences may relate to educational inequality among socioeconomic and racial groups in society. Morgan's study has provided one interpretation by examining varying levels of student participation in tracked classes in relationship to socialization for democratic citizenship. It seems, however, that a more elaborate framework from which to examine a wide variety of differences is needed. It is hoped that this study will provide this much needed work.

CHAPTER III

CULTURAL REPRODUCTION: A THEORETICAL BASIS FOR EXAMINING TRACK DIFFERENCES

Recent work of both American and European scholars, (e.g., sociologists Michael F. D. Young, Pierre Bourdieu, Jean-Claude Passeron, and Basil Bernstein; economic analysts Samuel Bowles and Herbert Gintis; and curriculum theorist Michael Apple) provided the theoretical base for generating questions and interpreting findings about the relationship between tracking and educational inequity within schools. Viewing schools as societal structures that reflect the values of the larger society and operate in ways consistent with the maintenance of the existing social order, these theorists examine the form and content of the schooling experience in a non-traditional way. They do not accept the generally held assumptions that schools are neutral, meritocratic institutions through which individuals from all social, ethnic, and economic groups can maximize their potential, achieve economic and social mobility, and in doing so fulfill the needs of the larger society. On the contrary, schools are seen as biased toward the interests of the most powerful groups in society and structured to maintain the social and economic stratification of society with features that function to inhibit social and economic mobility. Educational attainment is viewed as a reward for conformity to the values of the dominant social groups, rather than a universalistic reward for merit. Thus, these scholars propose a "reproduction" theory of schooling in which schools, imbued with a particular set of values and embodying particular political and economic interests, reproduce the heirarchical social, political, and economic structures of the larger society. Furthermore, the school is viewed as operating (contrary to the intents of most educators) as part of the societal dynamic through which the inequality in the production, distribution, and control of both economic and educational goods is maintained. From this alternative perspective, then, inequality in schools is not seen as resulting from inefficient functioning but as a reflection of the inequality in the structure and culture of the larger society.

By drawing on particular propositions of this theoretical perspective, questions about tracking in schools were raised regarding its role in this hypothesized reproduction of societal inequality through schooling. In this view, the allocation of students to different tracks, and any different educational experiences which result, could be seen, not primarily for the purpose of meeting individual learning needs better, but as a means of sorting individuals, largely according to their social origins, and preparing them with the knowledge, values, attitudes, and behaviors appropriate to their future roles in the social and economic order. Thus, an examination of any differences in curricular content, instructional practices, and social relationships and interactions in classrooms within different tracks, through the exploration of questions grounded in this reproduction theory, provides some illumination of the ways schools may fail to provide educational equality for poor and minority students.

From British sociologist Michael Young's (1971) discussion of the unequal distribution of power in society as a consequence of the uneven distribution of cultural knowledge among social, economic, and other groups, the question of the uneven or unequal distribution of knowledge among groups in school arises. Young posits that some groups have access to more power in society because of the different kinds of knowledge made available to them and not to others. This unequal distribution of power in society, is maintained by those already in power with their control of the ways in which institutions transmit knowledge. High-status knowledge, as defined by these powerful groups, is distributed disproportionately to students from privileged backgrounds.

Michael Apple (1978), American curriculum theorist, builds on the work of Young by defining high-status knowledge and its relationship to the maintenance of power. Using an economic metaphor, Apple proposes that high-status knowledge is linked to the reproduction of economic inequality in that it is made a scarce commodity whose distribution is limited. This scarcity and limited distribution are the sources of its importance in the securing of power in society. Schools function in this process to legitimate and distribute to select groups these cultural resources that are related to unequal economic forms. Apple defines high-status knowledge in corporate societies as the technical knowledge necessary to keep these economies operating at a high level. Because the generation and preservation of this technical knowledge largely takes place in the universities, high-status knowledge in secondary schools is that which provides access to the university. Thus, highly academic knowledge becomes the scarce commodity with limited distribution in schools that provides access to future power in society.

In addition, according to Bourdieu and Passeron (1977), this high-status knowledge is used as one of the mechanisms that functions to place and retain students in different social and economic groupings. This high-status academic knowledge reflects the culture of the dominant group, and the propensity toward high achievement in schools is based on this academic criteria. As a result, high-status knowledge, biased in favor of the middle class, serves to allocate students from lower class backgrounds to lower status positions, thus reproducing the existing heirarchical society.

In these ways, then, the legitimation and distribution of high-status knowledge in the schools serves to reinforce and reproduce the inequities in the larger society. Therefore, in this study, the distribution of school knowledge to students in various tracks was examined in two ways. Track levels in schools, reflecting to a great extent social, ethnic, and economic groupings in society, were explored to determine whether they provided differential access both to quantities and types of knowledge and to the type of instructional practices that maximize the learning of curriculum content. Therefore, the first objective of the study was to explore the following:

> How are both the quantity and quality of school knowledge distributed to different tracking groups within schools?
>
> If there is differential distribution of knowledge, does it result in the limiting of the access to high-status knowledge to particular groups?

These questions were explored by seeking the following information from the collected data: Does the curriculum of classes at various track levels vary in the amount of time spent on instruction as opposed to other activities? Does the curriculum of classes at different track levels vary in the type of instructional content made available to students?

In addition to the amount and type of curricular content available to different groups of students, important aspects of the distribution of knowledge are the instructional techniques and behaviors employed by teachers in the classroom. In their 1971 review of research on effective teaching behaviors and instructional practices, Rosenshine and Furst identified five teaching variables that had consistently strong positive correlations with student achievement. Of these five, three were investigated in this project: teacher variability in the provision of learning opportunities, including the extent and degree of assistance and the variety of activities made available; teacher clarity in the organization of instruction and in explanations and directions; and, teacher enthusiasm and involvement (Rosenshine & Furst, 1971). It was posited that if these three teaching behaviors were differentially distributed among tracks, it could be concluded that inequality in the distribution of school knowledge was a likely result. Thus, the second objective of the study was to explore the following:

> How are effective instructional practices and teaching behaviors distributed to different tracking groups within schools?

If there is a differential distribution of effective teaching practices, does it result in the limiting of the exposure to the most effective instruction to certain of these groups within schools?

These questions were explored by seeking the following information from the collected data. Does teacher variability, including the variety, extent, and type of instructional activities, materials, and teacher assistance vary with the track level of classes? Does the clarity of teacher instruction vary with the track level of classes? Does teacher enthusiasm vary with the track level of classes?

In their analysis of schools as agents in the reproduction of the inequalities in the American economic system, Samuel Bowles and Herbert Gintis (1976) focus on the differential socialization of children from various social classes. By socializing children with the values and personality characteristics of the class of their origins, Bowles and Gintis assert that schools prepare students to meet the demands of the occupations they will be expected to assume within the existing class structure. This is accomplished through "the close correspondence between the social relationships which govern personal interaction in the work place and the social relationships of the educational system" (p. 12). Bowles and Gintis, like the other reproduction theorists, do not contend that the educational system operates in this manner as a result of the conscious intentions of teachers and school administrators, but rather as an effect of the close structural similarities in the social organizations of schools and the work place. In this view, the social relationships and interactions in schools serve to reproduce the consciousness of workers by fragmenting students into stratified groups where different capabilities, attitudes, and behaviors are rewarded. These institutional relations serve to reproduce "the self-concepts, aspirations, and social class identifications of individuals to the requirements of the social division of labor" (p. 129). In doing so, the educational system produces from lower class children workers who will be subordinate to external control and alienated from the institution, but willing to conform to the needs of the work place. Passivity and the absence of close interpersonal relationships are characteristic in such environments. In contrast, students destined for upper status positions in the economic heirarchy are more likely to experience social relationships and interactions which promote active involvement, affiliation with others, and the internalization of norms rather than coercive control.

Drawing similar conclusions from his study of educational transmission in the school, Basil Bernstein (1975) hypothesized that the basis of this transmission is in the structure of social relationships in the schools and in the variety of pupil responses to the roles school creates both within and between social classes. It is this structure of social relationships which controls curriculum, pedagogy, and evaluation in the schools. In Bernstein's view, schools become differentiated as they attempt to function instrumentally, to fulfill the needs of society by imparting specific knowledge and skills to students. This can be a divisive influence when children are separated into groups, often reflective of social class, to aid the development of specific skills in selected students. While a student's level of involvement in school is initially determined by the family's understanding and acceptance of its means and ends, this involvement is modified and/or enhanced by the social relationships and interactions in the school. It is likely that in a differentiated (tracked) school, a lower class student with initial low involvement, placed in a homogeneous group, will become increasingly uninvolved and alienated from the school. This can result, according to Bernstein, from the heirarchical structure of relationships characterized by teacher-pupil authority relationships and an emphasis on reward and punishments.

It seemed likely, then, that classes at different track levels would be characterized by vastly different social relationships and interactions. Low track classes may help to socialize students from lower groups toward passivity; institutional relationships characterized by dominance, coercion, and distance; and alienation from the educational environment. On the contrary, relationships and interactions in high track classes may help to socialize students toward active involvement, institutional relationships that are characterized by warmth and concern; and affiliation with the learning experience. If these conditions do exist, differential socialization in the schools could, in these ways, serve to reinforce and reproduce the inequities in the larger society by limiting some students' positive participation in the educational experience. As a result, the third objective of the study was to explore the following:

> Do students in different tracking groups within schools participate in different types of social relationships and learning interactions in their classrooms?

If there are systematically different social relationships in classrooms, do these differences indicate that these groups of students may be led differentially to passivity and alienation from the classroom or to involvement and affiliation with the learning experience?

These questions were explored by seeking answers to the following in the data. How do student-teacher relationships and teacher affect vary among classes at different track levels? How do student-student relationships and student affect vary among classes at various track levels? Does the type of learning interactions (active or passive student involvement) vary with the track level of classes?

An essential element in the cultural reproduction perspective of schooling is that the differential treatments groups of students receive result not only in differences in cognitive outcomes, but in non-cognitive outcome differences as well. In this view, in fact, perhaps even more important than the differences expected in the type and quantity of knowledge acquired by students in various educational settings are the differences expected in students attitudes toward institutional structures, toward themselves, and toward their anticipated roles in adult society. For, it is these attitudes which make possible the continuance of a system characterized by unequal and undemocratic social and economic structures.

The production in students of the "appropriate" attitudes results from a process termed the "legitimation of inequality" by Bowles and Gintis (1976) and discussed by most of the reproduction theorists. Through this legitimation process, students come to accept the unequal features of the larger society--hierarchical authority structures and unequal pay, for example--as natural. And, not only do students accept these unequal social and economic structures as legitimate, but even those at the bottom come to see their own limited future roles in these structures as largely appropriate and acceptable.

Bowles and Gintis assert that schools accomplish this legitimation through the "ostensibly objective and meritocratic selection and reward system of U.S. education" (p. 108). Jerome Karabel and A.H. Halsey (1977) see this process as occurring through the structure and events of everyday school life which "upholds those meritocratic values that justify differential rewards; the separation of the 'successful' from the 'failures' provides daily object lessons in inequality" (p. 25). In this same vein, Apple (1978) posits that the form and content of schooling practices used to organize procedures such as tracking play a major role in enabling students to internalize failure resulting from the stratification process as an individual rather than a social problem. Bordieu and Passeron (1977) assert that this process is facilitated by the fact that those at the lower end of the social strata value the culture of the dominant groups and, as a result, tend to devalue their own. Because the schools focus on the dominant culture and "cultural styles," students are easily persuaded that the schools authority is legitimate. In this way, schools can, with little or no coercion, "convince the disinherited that they owe their scholastic and social destiny to their lack of gifts or merits" (p. 210).

Through the selection and allocation system, and the differential educational treatments students receive, then, schools are seen by the cultural reproductionists as either reinforcing or modifying students' self-concepts and aspirations so that not only do students at the top of the social hierarchy view elite positions as appropriate for their futures, but those at the bottom also are either satisfied with or resigned to the prospect of lower class roles. Apple cautions against an oversimplistic view of students as passive recipients of this socialization. He looks, rather, to the interplay and conflict between students and elements of schooling as the processes likely to produce this acceptance of a schooling hierarchy and students' internalizing the appropriateness of their places in it. The result, however, is the same. Students come to view as legitimate the principles that govern the existing social order and see themselves as ultimately responsible for their own places in it.

The cultural reproduction view of the legitimation of inequality was examined in this study in the following way. Track levels in schools were explored to determine whether student attitudes which may reflect this legitimation process seemed to cluster within particular track levels. Some evidence of this process occurring might be seen if track levels were clearly different in that the self-concepts of students in the lowest track were generally lower, if students in the lowest tracks had low-level aspirations, and yet, if relatively little dissatisfaction with their schooling experience was expressed by these same students. If these attitudes were evidenced in the data, it would be possible to suggest that students at the bottom of the schooling, and in many cases the societal, heirarchy had adjusted their aspirations accordingly, yet did not view the school as treating them unjustly. Indeed, we might conjecture, as the cultural reproduction theorists do, that these students had internalized the legitimacy of the hierarchy and assumed responsibility for their places in it. Therefore, the fourth objective of this study was to investigate the following:

How are student self-concepts, aspirations and future plans, and attitudes toward the schooling experience distributed among different tracking groups within schools?

If there is a differential distribution of student attitudes, does it reflect the "legitimation of inequality" proposed by the cultural reproduction theorists?

These questions were explored in the data by seeking answers to the following questions: Do the self-concepts of students vary with track level? Do student aspirations vary with track level? And, do student attitudes toward their schools, subjects, and classes vary with the track level of classes?

CHAPTER IV

A SECONDARY ANALYSIS OF DATA: THE METHODOLOGY

A comprehensive investigation into the complex teaching and learning processes that comprise the day-to-day experiences of students in classes at different track levels requires either the collection of or access to an extensive body of data concerning a large and diverse sample of classes. While the collection of data on such a wide range of variables about a large sample would have been neither physically nor financially possible for a single researcher, a secondary analysis of data already collected proved well-suited for the investigation of this problem. These data were collected by the Research Division of the Institute for Development of Educational Activities under the direction of John I. Goodlad for the national research project entitled A Study of Schooling.[1]

The Sample and Data Collected

The Study of Schooling sample included grades 1 through 12 in schools selected by "triples." A triple consisted of a senior high school, a feeder junior high or middle school, and a feeder elementary school. Schools were selected in triples so that the entire span of pre-collegiate schooling could be studied in a single community. Triples were selected to provide a variety of schools with different combinations of the following characteristics: school size, economic level, racial composition, location (urban-suburban-rural), and region of the country. Thirteen triples were selected. All together 8,624 parents, 1,350 teachers, and 17,163 students in 38 elementary and secondary schools from seven states located in the Northwest, Southwest, Southeast, and Midwest sections of the nation participated in A Study of Schooling. A representative sample of classes in each subject area at each school was selected and all students within sampled classes were surveyed. Generally, the number of participating students and teachers is large enough to warrant investigation of the data for patterns, trends, and relationships.

The data analyzed for this project were collected during Spring and Fall, 1977. On-site structured questionnaire, interview, and observation methodologies were used for data collection. Students, teachers, administrators, and parents answered survey questions; teachers and students were observed in classrooms; and teachers were interviewed and asked to prepare a comprehensive package of curriculum materials (topics, skills, textbooks, materials, tests) used in their classes.

This investigation of tracking and classroom processes focused on the analysis of Study of Schooling data relating to all of the sampled English/language arts and mathematics classes in the 25 secondary schools. Data were collected from 83 senior high school and 73 junior high or middle school English/language arts classes. Of the senior high classes, 18 were identified as high achievement level classes, 31 as average achievement level classes, 12 as low achievement level classes, and 22 as classes heterogeneous in achievement level. The junior high/middle school sample consisted of 16 classes identified as high achieving groups, 15 as average achieving groups, 18 as low achieving groups, and 24 as heterogeneous groups. Of the 72 senior high mathematics classes from which data were collected, 22 were identified as high achievement level classes, 20 as average, 19 as low, and 11 as heterogeneous in achievement level. At the junior high level, of the 69 mathematics classes sampled, 19 were identified as high achievement level classes, 17 as average, 17 as low, and 16 as heterogeneous in achievement level.

Instrumentation

Between February 1974 and August 1975, new comprehensive instruements were developed by the staff of A Study of Schooling. Questionnaire and interview schedules were constructed for students, teachers, school and district administrators, other adult school staff, parents, and other community members. An observation form was designed for classrooms and school staff meetings. Survey questions were formulated and constructs operationally defined by the generation of scalable items. The development of all measurement techniques included repeated field testing, analysis and revision.

The entire instrument package was pilot tested during a six-week period at a triple in a California school district. As a result of the pilot experience, significant modification, refinement and integration of data collection procedures and instrumentation were achieved. The Stanford Research Institutes' classroom observation instrument was significantly modified so as to (a) classify data by subject level and (b) break down data by "classroom context" (instructional, behavioral, routines, or social). Most major instrumentation was converted to optical scanning for efficient and accurate computerization.

Data concerning class-specific variables for the study of tracking were drawn from responses to the teacher and pupil questionnaires, teacher open-ended interview schedules and the classroom observation instrument. Of the class-specific items on the student questionnaire 113 were attitudinal, Likert-type measures of class climate. From these separate items eighteen scales were generated using factor and cluster analysis around constructs considered in this study including students' views of the teacher, perceptions of other students, and classroom instructional practices.[2] Additionally, data from three sections of the classroom observation instrument were included in the analysis of track level differences. The Five Minute Interaction (FMI) was used during each classroom observation to record the fine details of the adult/student interactions taking place. The Snapshot was used to identify 1) the activities occurring in classrooms, 2) the materials used in these activities, 3) grouping patterns, 4) adult and student responsibilities, and 5) students involved in activities independent of adults. The Daily Summary was used to collect data regarding the space and materials available and utilized by students. In addition, the collected curriculum materials were included as a data source. One additional instrument was specifically developed for the collection of additional data for this study. A questionnaire for administrators was designed to determine the track level of classes in the sample.[3]

Variable Measures

Guided by the research objectives the study focused on the exploration and analysis of a complex set of variables that characterize the classroom experience and attitudes of students in different track levels of secondary English/language arts and math classes. Teacher, student, and observer perceptions were included in these explorations and analyses of curricular content, instructional practice, social relationships and classroom interaction, and student attitude variables.

The variables in the study, reflected in the research questions, were operationally defined and measured as follows:

Independent Variable--Track Level of Classes

Each sampled class was identified by a school counselor or administrator as a high achievement level class, an average achievement level class, a low achievement level class, or as a class heterogeneous in achievement levels.

Dependent Variables--Curricular Content

Time on instruction. The relative amount of class time spent on instruction or learning activities was gauged with data from three different sources--teachers, students and observers. Furthermore, additional information about the time students spent learning English and math was gained from teachers' stated expectations for students' homework time.

Teachers were asked to indicate the approximate percentage of class time spent on instructional activity with the following questionnaire item:

On the average, approximately what percentage of class time is spent on each of the following?

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Daily routines (getting started, passing out materials, taking attendance, making announcements, messages, intercom, preparing to leave)	○	○	○	○	○	○	○	○	○	○	○
Instruction	○	○	○	○	○	○	○	○	○	○	○
Getting students to behave	○	○	○	○	○	○	○	○	○	○	○

Students were asked to rate the time spent on learning in the classroom with their response to the following item:

In this class, how much time is usually taken by the following 3 things?

Mark the circle under the word "Most" for the thing that takes the most time.

Mark the circle under the words "Next Most" for the thing that takes the next most time.

Mark the circle under the word "Least" for the thing that takes the least amount of time.

	Least	Next Most	Most
(1) Daily routines (passing out materials, taking attendance, making announcements)	○	○	○
(2) Learning	○	○	○
(3) Getting students to behave	○	○	○

Responses were coded as Most = 3, Next Most = 2, and Least = 1.

Classroom observers recorded the time spent on instruction in the classrooms in a somewhat different way. Each observed interaction involving a teacher or other adult in the classroom was classified as either 1) instructional, 2) involving class routines, 3) dealing with student behavior, or 4) social. The percentage of total observed interactions that were rated as instructional in classes was used as one measure of observed time on instruction.

Observers also noted on the Snapshot portion of the observation instrument the occurrence of periods of class time in which no instructional activity was assigned to either the entire class or to groups of students within the class. The average percentage of students observed in these types of classroom events during the observation period was used as an inverse measure of observed time in instructional activity.

Teachers also reported their expectations for the amount of time students should spend on homework. Teachers were given five response options to this question which were coded in the following way: none = 1, about half an hour = 2, about one hour = 3, about 2 hours = 4, and more than two hours = 5. This score was used to provide a measure of time students were expected to spend on learning.

Content of instruction. The type of instructional content presented by teachers in the English/language arts and math classes in the sample was assessed with data from two sources. One source was the topics and skills lists submitted by teachers as a part of the curriculum materials task. The second was teachers' answers to the following interview question: "If you had to rank order them from most important on down, what are the five most critical things you want the students in your ________period/grade class (subject:________) to learn this year? By learn, we mean everything that the student should have upon leaving the class that (s)he did not have upon entering. (List no more than five.)"

Three aspects of the content of instruction were selected for analysis: (a) the topics of instruction listed, (b) the cognitive levels of skills and learning activities identified, and (c) the non-cognitive behaviors listed or mentioned by teachers as content of instruction. These three areas were approached in the analysis by classifying each teacher's response in each area on a continuum between two distinct types of classes.

Topics of instruction. It was expected that the lists of topics mentioned by English teachers would range from a "pure" college preparatory type--consisting only of topics that have traditionally been used in this context--to a "pure" basic literacy or life orientation type--consisting solely of topics related to functional literacy and daily life experiences. These two ideal types were conceptualized as being comprised of the following kinds of instructional topics:

college preparatory type

a) standard works of literature - (either classic or modern) - historical survey, study of genres, study of literary elements
b) expository writing (essays, themes, research writing), writing in particular styles or genres
c) grammar analysis - concepts beyond the simple sentence
d) skills required for SAT exams - advanced vocabulary and comprehension
e) language study - historical analysis, semantics, linguistics as content

basic literacy or life skills type

a) reading skills - use of workbooks, reading texts, adolescent literature
b) basic writing skills - simple narrative writing, writing a complete sentence

c) work or life related literacy skills - filling out forms, interviewing, etc.
d) language mechanics and standard usage emphasis
e) listening skills

With these two ideal types representing the extremes, each teacher's listing of instructional content was rated using the following scale:

5--only college prep topics mentioned
4--college prep topics dominate
3--equal emphasis on college prep and basic literacy or life orientation topics
2--basic literacy or life orientation topics dominate
1--only basic literacy or life orientation topics mentioned

In the area of mathematics, it was also expected that teachers' lists of instructional topics for their classes would range from a "pure" college-preparatory type to a "pure" practical (daily life or work-oriented) type. These two ideal types were conceptualized as containing the following kinds of topics:[4]

College-Preparatory Type

a) Mathematical ideas--numeration systems, relations, functions, mathematical models, algebra concepts, geometric concepts, statistics and probability, language or symbolism, calculus.

b) Computation of integers and the entire set of rational numbers and using approximations with irrational numbers, solving equations and inequalities, etc.

c) Measurement involving formulas

d) Application of math to other scholarly disciplines and other areas of mathematics.

Practical Mathematics Type

a) Basic arithmetic facts--number systems, 4 basic operations

b) Computational procedures with natural and rational numbers of arithmetic.

c) Simple measurement and metric conversion

d) Application of math to daily life situations: simple and compound interest, installment buying, depreciation, calculating wages, etc.

With these two types representing the extreme ends of the continuum, each teacher's listing of instructional topics was rated as follows:

5 - only college preparatory topics mentioned
4 - college preparatory topics dominate lists
3 - equal emphasis on college preparatory and practical topics
2 - practical mathematics topics dominate
1 - only practical mathematics topics listed

Cognitive level of skills and instructional activities. Similar analyses were conducted regarding the cognitive levels of the skills and learning activities listed by English teachers. In this area classes were expected to fall on a continuum between a type that would consist entirely of instruction requiring only low level cognitive processes and a type in which higher level cognitive skills were required for most or all learning activities. These two ideal types were conceptualized as follows:

higher level type
evaluation--judgment making
criticism--interpretation (symbolism, etc.)--drawing inferences
appreciation
generalization--synthesis

lower level type
rote learning--knowledge acquisition
comprehension

Application skills were considered to be at an intermediate level and not exclusive to either of these "ideal" types. With these two types representing the extremes, each teacher's responses were rated on the following scale:

5--clear emphasis on higher level skills
4--frequent mention of higher level skills
3--higher level skills seldom appear
2--rote learning/comprehension/application listed
1--only rote learning/comprehension mentioned

Math classes, as well, were expected to fall on a continuum between a type which would consist entirely of instruction requiring only low level cognitive processes and a type in which higher level cognitive skills were required for learning activities. The relationship between math activities and cognitive levels as discussed by Bloom were seen as follows:

Bloom's Taxonomy	Math Activities
Knowledge	Straightforward manipulation of problem elements based on learned rules: An emphasis on performing operations rather than on deciding which operations are appropriate.
Comprehension	Recall of concepts and generalizations or the transformation of problem elements from one mode to another: An emphasis on demonstrating understanding of concepts to produce a solution.
Application	Activity which encludes all three of the following: 1) recall of relevant knowledge, 2) selection of appropriate operation, and 3) performance of operation. This level is indicated in the solution of routine problems (used in a specific context and in a way practiced).
Analysis	Application type activity (see above) when used with non-routine problems.
Synthesis and Evaluation	No specific mathematical interpretation.

Classes were rated according to the highest level of activities mentioned by teachers. Although classes may have differed in the frequency of activities at various levels, this could not be determined from the teacher's responses. Therefore, the classes were rated as follows:[5]

1--only knowledge level tasks listed by teacher

2--knowledge and comprehension task listed by teacher

3--application level tasks listed by teacher

4--analysis level tasks listed by teacher

5--synthesis or evaluation type activities listed by teacher

It should be noted that every effort was made to separate the cognitive complexity of tasks from the difficulty level of the concepts that comprised the substance of activities. As a result, a class in which students were presented with word problems that required that they recall the four basic arithmetic operations, select the appropriate one, and perform it to solve a routine problem (e.g., figuring gas mileage, for example) would be rated as 3--application activities listed by teacher. So too, however, would a class in which an activity was listed including word problems that required students to recall, select, and perform trigonometric functions to solve routine problems.

General behaviors as content. In addition to listing subject matter content and skills in the Curriculum Materials Task and in interviews, some of the teachers specified general behaviors as part of the curricular content of the classes for which they were sampled. These responses were distinguished by their lack of a specific relationship to the subject matter of the class. They generally were of two types: desired student behaviors in the area of personal deportment and behaviors considered part of the learning process or classroom procedures.

For this analysis, these non-subject-specific statements of desired learnings were classified into three categories: 1) statements that indicated the teacher was seeking student autonomy and independence, e.g., "confidence in own thoughts," 2) statements that indicated that the teacher encouraged student conformity to teacher authority and established classroom routines, e.g., "learn to follow directions accurately and promptly," and 3) statements (or multiple statements) that indicated both types of behaviors were encouraged or statements difficult to interpret as distinctly belonging either of the above two categories, e.g., "self-discipline." The following chart lists the kinds of behaviors mentioned by teachers that were classified as either independent or conforming behaviors.

independence
critical thinking
individual projects or assignments
active involvement of students
self-direction
creativity

conformity
getting along with others
working quietly
improving study habits
punctuality--both in attendance and handing in assignments
cooperation
conforming to rules and expectations

Among the senior high English classes studied, 37 teachers (45 percent) mentioned these non-subject-related behaviors as instructional goals or content, and 26 teachers (35 percent) of junior high/middle school English classes included these types of learnings. Similar percentages of the math teachers included non-subject-related behaviors as topics of instruction or as desired learnings. At the senior high level 35 teachers (49 percent) and at the junior high level 28 teachers (41 percent) included these behaviors as instructional content. Throughout this discussion it should be borne in mind that only about half of the high school classes and about a third of the junior high/middle school classes are included in the analyses of this variable.

The comments of each of these teachers were rated according to the following scheme:

5--emphasis on student independence
3--equal emphasis on independence and conformity or
   ambiguous statements
1--emphasis on student conformity

Dependent Variables - Instructional Practices

Teacher variability. Several measures were used to assess the extent and types of teacher assistance available to students and the variety of learning experiences provided in the classroom. Student data were used to ascertain teacher willingness to try a variety of instructional approaches. Teacher, student and observer data were used to estimate the variety of learning materials and activities teachers made available to students in the classroom.

Students indicated their level of agreement or disagreement with the following statement: "This teacher is willing to try different ways of doing things." Four response options were provided which were coded as follows: strongly agree = 4, mildly agree = 3, mildly disagree = 2, and strongly disagree = 1.

Teachers were asked to indicate the frequency with which they used the following materials in their class: textbooks; other books; work sheets; films, filmstrips, or slides; learning kits; games or simulations; newspapers or magazines; tape recordings or records; television; and teaching machines or equipment for computer assisted instruction. Teachers indicated that they used each material "never," "not very often," "often," or "always or most of the time." The variety of materials available to students in each class was determined by counting the number of materials to which teachers responded "not very often," "often," or "always or most of the time." The sum of the materials receiving any one of these responses became a measure of the number of different kinds of materials made available to students in the classroom--albeit with differing frequencies. The variety of materials reported by teachers was used as one indicator of teacher variability.

Students reported the materials they used in class in a somewhat different way. To the same list of materials, students indicated whether or not each type of material was used in their class with "yes" or "no" responses. To determine student perceptions of the variety of materials use, each material to which 25 percent of the students in the class responded "yes" was counted. The number of materials receiving at least this percentage of "yes" responses in a class became, then, a measure of students' perceptions of the variety of materials used in that class.

A measure from the observer instrument was used to gauge the use of supplemental materials. Observers recorded the use by students or teachers of materials other than books during the interactions which were coded as part of the Five Minute Interaction (FMI) portion of the classroom observations. The percentage of total observed interactions in which these materials were used became a measure of the use of supplemental materials in classrooms.

The variety of learning activities provided students, another indicator of teacher variability, was measured in much the same way as was variety in materials use. Teachers indicated how often they had students engage in each of the following activities:

> Listen to me when I talk or demonstrate how to do something...
> Go on field trips...
> Do research and write reports, stories, or poems...
> Listen to student reports...
> Listen to speakers who come to class...
> Have class discussions...
> Build or draw things...
> Write answers to questions...
> Take tests or quizzes...
> Make films or recordings...(English only)
> Act things out...(English only)
> Read for fun or interest...(English only)

The number of activities teachers reported that they ever had students do was used as a variety of activities score.

Students reported the activities done in their classes with a "yes" or "no" response to each of the same activities listed above.

As with students' perceptions of materials, variety of learning activities in the students' view was computed by counting the number of activities to which 25 percent or more of the class responded "yes." This count became a variety of activities score.

From the Snapshot portion of the observation data a measure of the variety of activities that occurred in classrooms was obtained by counting the number of different learning activities that were recorded by observers during the entire observation period.

In the same way, the Snapshot portion of the observation instrument measured the variety of grouping patterns which occurred in classrooms. This variable was used as an additional measure of teacher variability.

Teacher clarity. Two learning environment scales, each comprised of sets of statements concerning a single aspect of class climate, Teacher Clarity and Organization, were used to measure students' perceptions of the clarity of their teachers' verbal instructions and the organization of learning in the classroom. (See Appendix A for a listing of the learning environment scales and the items included in each scale.) Additionally, two single student items were used--"This teacher tells us ahead of time what we are going to be learning about" and "Everyone in this class knows what we may or may not do"--as measures of teacher clarity. Responses to both the scales and single items consist of students' level of agreement with the statements. Responses to these items and scales were coded as follows: strongly disagree = 1, mildly disagree = 2, mildly agree = 3, strongly agree = 4.

Teacher enthusiasm. The items that comprised the Teacher Enthusiasm scale (see Appendix A) were used to ascertain students' perceptions of how much teachers seemed to enjoy teaching their classes. Responses to this scale were coded in the same way as were the Teacher Clarity measures.

Dependent Variables--Social Relationships and Classroom Interaction

Teacher-student relationships and teacher affect. The classroom learning environment scales included measures of how students perceived their teachers' relationships with them. Two of these scales--Teacher Concern and Teacher Punitiveness--were used as measures of the positive or negative character of student-teacher relationships in classrooms. Responses to these scales were coded as follows: Strongly disagree = 1, mildly disagree = 2, mildly agree = 3, strongly agree = 4. (See Appendix A for a list of the items which make up these scales.)

Classroom observers noted the affective tone of each teacher initiated interaction during the FMI segments of the classroom observation periods. Positive affect was noted whenever teachers used humor, positive touching, or an overt expression of enthusiasm. Negative affect was recorded when the teacher was demeaning, punishing, angry or overtly negative in interactions with students. The percentages of total class interactions in which teachers displayed positive and negative affect became measures of these variables.

Another indicator of the type of teacher-student relationships that existed in classrooms is the degree to which teachers emphasized student behavior and discipline. Classroom observer data (FMI) was used to determine the percentage of total observed class interactions in which a teacher was concerned with student behavior. Teacher and student perceptions were also used to determine the proportion of class time spent getting students to behave. As they did for time on instruction and learning, teachers and students reported on the amount of class time spent on behavior (see page 5 for actual items and response codes).

Peer relationships and student affect. Another set of variables measured students' relationships with each other in the classroom and the affective quality of student interactions. Several of the learning environment scales were used to assess students' perceptions of these aspects of their classroom experience: Classroom Dissonance, Student Compliance, Student Apathy, Peer Esteem, Student Competitiveness, and Student Cliqueness. Responses to these scales were coded as follows: strongly disagree = 1, mildly disagree = 2, mildly agree = 3, strongly agree = 4. (See Appendix A for a listing of the items which make up these scales.)

The responses to two additional items in the Student Survey were used to provide insight into how students perceived the peer relationships in their classrooms. Students reported their level of agreement or disagreement with the statements "Students in this class are unfriendly to me" and "I feel left out of class activities." Responses to these items were coded in the same way as the scales listed above.

Classroom observers recorded the affective tone of student initiated verbal interactions with adults. Like the teacher interactions, student interactions were classified during the FMIs as either positive or negative if overt expressions of either type were made. Positive affect was noted whenever humor, positive touching or an expression of enthusiasm occurred. Interactions were coded as negative if they were demeaning, punishing or included an expression of negative feeling. The percentages of total class interactions that included positive and negative student affect were used as measures of these variables.

Type of student involvement. Several kinds of measures were used to explore the type of learning interactions students engaged in at different track levels. Student, teacher, and observer data were used to assess whether track levels could be characterized by either passive or active student involvement in classroom instruction.

Teacher, student, and observer data were used to measure the occurrence of active and passive learning activities in the classroom. Of those activities to which both teachers and students responded, the following were presumed to require more active engagement on the part of students than the others: go on field trips; do research and write reports, stories, and poems; have class discussions, build or draw things; make films or recordings; and act things out. The remaining activities--listen when the teacher talks or demonstrates how to do something; listen to student reports; listen to speakers who come to class; write answers to questions; take tests or quizzes; and read for fun or interest--were seen as requiring a more passive engagement of students. Teachers reported the frequency with which they had students do activities by selecting one of four response options which were coded as follows: never = 1, not very often = 2, often = 3, and always or most of the time = 4. The seven more active activities listed above were combined to form an Active Activities scale. Similarly, the five more passive activities were combined to form a

Passive Activities scale. A teacher's scale scores are the average of his or her responses to each group of activities.

Student data was also used to compare the relative occurrence of passive and active learning activities in classrooms. From the students' "yes" or "no" responses to each activity listed, an average "yes" response was calculated for each class on each of the two sets of activities--active and passive. The average percentage of students in a class who responded "yes" to each kind of activity became the class scores for these two variables.

Data from the Snapshot portion of the classroom observations were also used as a measure of the extent to which two types of activities took place: those which seem to require an active involvement by students and those which seem to be more passive. The following activities from the Snapshot were conceptualized as more active: 1) explain, lecturing or reading aloud by students, 2) demonstrations given by students, 3) discussions, 4) simulations or role playing, 5) students using manipulative materials or games, and 6) verbal practice and performing (recitation, speech-making, debate, drama practice). The sum of the frequencies of each of the listed activities was used as a class Active Activities score. In contrast, the following observed activities were determined to require a more passive involvement on the part of students: 1) lecturing, explaining or reading aloud by the teacher, 2) a demonstration given by the teacher, 3) students reading silently, 4) students working on written assignments, 5) students taking tests or quizzes, and 6) students listening to or watching media (television, tapes, films, etc.). As with the more active activities, the frequencies of each of the above activities were summed to obtain a class Passive Activities score.

The frequency with which students led any classroom activity, as measured by the Classroom Snapshot, was used as an additional indicator of active student classroom involvement. Observers noted the mode of leadership of the activities observed. The percentage of observed student direction (relative to adult led, independent, and cooperative activity) was used as a measure of student leadership of classroom activity.

Furthermore, student involvement in the learning process was measured as well by counting the frequencies of the occurrences of cooperative small, medium, or large groups in any of the learning activities recorded on the Snapshot by observers.

Three other types of student involvement in the classroom were assessed as well. First, two measures of the extent of student decision making were used. The Student Decision-Making scale derived from class climate items on the Student Survey was used to obtain students' perceptions of their involvement. Responses to this scale were coded as follows: strongly disagree = 1, mildly disagree = 2, mildly agree = 3, strongly agree = 4. The Locus of Decision-Making portion of the Observation Daily Summary provided the percentage of observed classroom decisions that were teacher-made.

The extent to which teachers used open-ended questions in instruction was also determined to be indicative of the type of student involvement in classroom learning. The FMI data permitted the computation of the percentage of total classroom interactions which were open-ended questions in the context of instruction.

Finally, the observation data provided two measures of students' response to instruction. The Snapshot data were used to calculate the average percentage of students who were actively participating in the prescribed activity. An evaluation of high interest was made when observers noted that the students appeared enthusiastic about the task they were involved in. Observer perceptions of the percentage of students at high interest level were coded as follows: 0 to 24 percent = 1, 25 to 49 percent = 2, 50 to 74 percent = 3, 75 to 100 percent = 4. These broad categories, unfortunately, do not permit the making of fine distinctions among classes on this variable. However, from the Classroom Snapshot, the average percentage of students who had been assigned to a learning activity, but were, in fact, engaged in "off task" behavior was calculated. This percentage was used as a further measure of student involvement.

Dependent Variables--Student Attitudes

Student self-concept. Three self-concept scales were included in the student survey: general self-concept, self-concept in relation to peers, and academic self-concept. The item breakdown of the three self-concept scales is shown below:

GENERAL (SCGEN) (8)

-4. At times I think I'm no good at all.
-7. There are a lot of things about myself I'd change if I could.
-8. Most people are better liked than I am.
-9. I often feel like giving up when I can't do my schoolwork.
10. I'm pretty sure of myself.
-11. Kids often pick on me.
-13. I often wish I were someone else.
-18. I get upset easily when I'm scolded.

Peers (SCPEER) (4)

1. I'm easy to like.
3. I'm popular with kids my own age.
6. Kids usually follow my ideas.
16. I'm a lot of fun to be with.

Academic (SCACAD) (6)

-2. I'm not doing as well as I'd like to in school.
5. I am a good reader.
12. I'm proud of my schoolwork.
15. I'm good at math.
17. I'm doing the best work that I can.
19. I am able to do schoolwork at least as well as most other students.

Students were asked to select one of four possible responses (strongly agree; mildly agree; mildly disagree; strongly disagree) to each item. Scale scores range from 1.0 to 4.0.

Student aspirations. The student survey also contained questions about the students' future plans. These questions asked about the student's own aspirations and expectations and what the student believed his parent's expectations for him/her to be. The following item was used to collect data on these variables:

7. Mark the ONE circle that best completes each of the following sentences.

	Quit school as soon as possible	Finish high school	Go to trade or technical school	Go to junior college	Go to a 4-year college or university	Go to graduate school after college	Don't know
If I could do anything I want, I would like to....	○	○	○	○	○	○	○
I think my parents would like me to ..	○	○	○	○	○	○	○
Actually, I will probably........	○	○	○	○	○	○	○

The mean class score on the third measure "actually, I will probably" was used as a measure of the average future plans of the students in a class. Additionally, the percentage of students in a class who chose the "don't know" response was used as a measure of the percentage of the class that was uncertain about their future plans.

Student attitudes toward school. Several variables were chosen to examine students' attitudes toward their schooling experience. The first was a single item asking students to grade their schools: "Students are usually given the grades A, B, C, D, and Fail to show how good their work is. If schools could be graded in the same way, what grade would you give to this school?" Responses to this item were coded as follows: A = 1, B = 2, C = 3, D = 4, Fail = 5.

Two student survey items were used to assess students' attitudes toward the subjects they were studying in the classes in which they were sampled. Students reported how important they believed each school subject to be and how much they liked each subject on five-point scales. Students responses about the subject of the class they were sampled in were used as measures of their attitudes toward that subject.

In addition to the more specific class climate scales, students responded to more general statements which became a scale measuring overall student satisfaction with the class (see Appendix A for the items which make up this scale). Also, students indicated their general interest in what they were learning in class with their responses to the following item:

How interesting or boring for you is what you are learning in this class?

very interesting
sort of interesting
sort of boring
very boring

These two measures were used as indicators of students' general attitudes toward the classes in which they were sampled.

Unlike the classroom process dependent variables, this last group of measures is not--with the possible exception of the Student Satisfaction scale--measuring attributes of the classes themselves, but rather attitudes which are more likely reflective of individuals in classes. The assumption here, however, is that the track level of the class a student is in may be associated with a wide range of student attitudes. Nevertheless, we cannot assume from the data in this study--gathered at one point in time in only one of the five or six classes a student was likely to be taking--that, even if these associations exist, there is a causal relationship between them. While it is likely that student attitudes influence track placement and track placement affects student attitudes neither conclusion can be drawn from these data alone. The data in this study lack the necessary controls on pre-track-enrollment variables (self-concepts, family background characteristics, attitudes toward school, future plans, etc.) and the longitudinal information about these attributes in students needed to make these conclusions. It is possible, nevertheless, to explore the relationship between student track placement and these attitude variables. And, it is likely that useful insights can be gained from an exploration of any clustering of student attitudes within track levels.

Analysis

Discriminant analysis was chosen as the primary analytic tool for this study as it measures the success with which sets of variables discriminate among groups of cases and provides an efficient basis for explaining the nature of these group differences. Additionally, by using discriminant analysis, cases not analyzed in the initial procedure can be classified into the group they most resemble in respect to each of the dimensions analyzed.

By weighting and linearly combining a set of variables on which groups are expected to differ, this procedure results in groups being as statistically distinct as possible. This is accomplished by forming one or more linear combinations of variables into "linear discriminant functions." These functions, and the group means (centroids) on them, permit two kinds of assessment. First, it can be determined whether there are differences among groups; the test of the equality of group centroids prior to the removal of the first discriminant function is equivalent to a MANOVA test of differences among group means on the entire set of variables. And, second, the nature of this differentiation can be explained--i.e., which measures appear to contribute most in differentiating among group types.

In this study this step of the analysis was used to describe the differences on six dimensions, as defined in the research objectives, among classes at three track levels (high, average, and low). This initial "discriminating" step was based on those tracked classes who had scores on every variable to be included in the analyses. This involved a total of 94 English classes: 28 high track classes (16 senior high and 12 junior high); 40 average track classes (28 senior high and 12 junior high); and 26 low track classes (11 senior high and 15 junior high). Of the sampled math classes, 98 tracked classes were included in this step: 38 high track classes (21 senior high and 17 junior high); 31 average track classes (18 senior high and 13 junior high); and 29 low track classes (17 senior high and 12 junior high).

Instead of conducting one huge multivariate analysis, considerable conceptual and substantive clarity was achieved by conducting smaller multivariate analyses relating to each objective separately. Additionally, these analyses were performed separately for the junior and senior high levels as well as overall classes.

For each of the analyses, because differences among three groups were considered, two discriminating functions were possible. However, only those functions were considered that contributed significantly to separation among the groups. To give substantive meaning to the discriminant functions in each analysis, the relative contribution of each variable was assessed by the size of its correlation coefficient with the function itself. The functions were rotated in order to improve their interpretability with the resulting highlighting of variables having the greatest contribution to each function.

In the second phase of the analysis--classification--two purposes were achieved. First, by reclassifying the tracked classes into groups, based not on their known track membership, but on their discriminant scores, it was possible to check the efficacy of the discriminant functions. In this way, the power of each set of discriminating variables in differentiating among track levels was assessed by examining the percentage of classes correctly classified.

Second, the information gained about these track level differences was used to describe the differences between the heterogeneous classes in the sample and the tracked classes. To accomplish this, discriminant scores for each heterogeneous (non-tracked) class were derived for each of the discriminating functions. Each class was then "classified" into the group (track level) with the closest mean score on the functions. This classification step was done separately for the two levels of schooling and overall classes on each of the analyses. This step made possible the identification of the track level each heterogeneous class was "most like" on each of the dimensions studied.

For descriptive purposes, summary statistics are also provided for each track level on all dependent measures on each dimension considered for each level of schooling separately and over all classes. These include group means, standard deviations and univariate F-ratios. However, one of the advantages of multivariate analyses is that variables which are important when viewed together with other measures may appear to be insignificant in conventional univariate analyses and, thus, their importance may be lost in a discussion of group differences. Conversely, variables that appear to be important in univariate analyses may not be so when considered as part of a set of measures. Therefore, in this study, the multiple discriminant analyses served as the basis for findings and interpretations.

The unit of analysis selected for this study is the classroom. Many of the variables are clearly class measures (e.g., the proportion of observed time spent on instruction and teachers' reports of the variety of materials used with a specific class). Other measures--students' perceptions of their learning environments, for example--are not so easily categorized. They may be viewed either individually as measures of characteristics of perceivers in the classroom context or collectively--averaged within classes--as measures of systemic properties of classes themselves. Because this inquiry was focused primarily on features of classrooms and groups, rather than on the students within them as individuals, the second approach seemed most appropriate in this case. Thus, the average of individual perceptions within classes was used as a measure of properties of those classrooms. This approach necessitated the aggregation of student data at the class level and the reporting of these data in terms of class means and percentages.

FOOTNOTES

1. More detailed information on A Study of Schooling can be found in the series of four sequential articles published in the *Phi Delta Kappan*. The first in this series, Goodlad, Sirotnik, and Overman (1979), includes a conceptual overview, sample design, and types of data collected.

2. For an extensive discussion of development of these items and scales see Sirotnik, K.A., Nides, M.A. and Engstrom, G.A. Some methodological issues in developing measures of classroom learning environment. *Studies in Educational Evaluation*, 1980, *6*, (3), in press.

3. For additional information on the methodology and instrument development phases of A Study of Schooling see Overman, B.C. *Study of Schooling: Methodology*. Paper presented at the annual meeting of the American Educational Research Association, 1979 and Giesen, P. and Sirotnik, K.A. *Classroom observation in A Study of Schooling: Description, methodology, and variable definition*. /I/D/E/A/--Study of Schooling Technical Report, 1980.

4. While the divisions between the two types of mathematical knowledge is that of the author's, it is based on the domains of mathematical content reviewed in J.F. Weaver, "Evaluation and the Classroom Teacher" in Begle, E.G. (Ed.) *Mathematics Education* The Sixty-ninth Year Book of the National Society for the Study of Education, Chicago, Ill: The University of Chicago Press, 1970, and illustrations from a variety of

secondary level mathematics textbooks--Mathematics: Concepts Applications (Scott, Foresman and Company), Mathematics: Modern Concepts and Skills (Raytheon Education Co.), and Mathematics: Structure and Skills (Science Research Associates), for example.

5. Again, while the scheme for rating classes was devised by the author, the relationship between Bloom's taxonomy of the cognitive domain and a taxonomy of school mathematics developed by Thomas Romberg and James Wilson for the National Longitudinal Study of Mathematical Abilities was made by Weaver (see note 4 above).

CHAPTER V

TRACK LEVEL DIFFERENCES:

THE RESULTS

The statistical analyses of the data from the 297 classes included in this study revealed that substantial differences existed among track levels in each of the three areas of investigation. While some discussion will be included in the following presentation of the findings, the implications of these results for the larger question of educational equity and their relationship to the cultural reproduction perspective of schooling will be considered in Chapter VI.

Student Race and Tracking

Before presenting the results of the discriminant analyses of the tracked classes in the sample and classroom processes, however, it seems valuable to include some findings on the distribution of white and minority students among the sampled classes to the extent that the Study of Schooling data permit. Since it has been clearly established in the literature (see Chapter II) that in multiracial schools, poor and minority students are found in disproportionately large percentages in low track classes and whites in disproportionately large percentages in high track classes, it is important to note that this was the case in the multiethnic schools included in a Study of Schooling as well. Eight of the twenty-five secondary schools in the sample had ethnically diverse student populations. Racial and/or ethnic identification was gathered about individuals at six of these schools: three senior highs and three junior high schools.

The white student populations at these six schools ranged from a low of 46 percent to a high of 53 percent with a mean for the six schools of 50.33 percent. Within these schools, however, an average of 62 percent of the students in high track English classes were white, a considerably larger proportion than in the student population as a whole. In contrast, only 29 percent of the students in low track classes at these six schools were white, a substantially smaller percentage than in the total student population (Table 1).

Eight high track and ten low track classes were included in the sample at these six multiracial schools. Of these eighteen classes, fourteen followed the predominant pattern in racial composition: disproportionately small percentages of these students in low track classes. Of the four classes that did not conform to this racial pattern, three were high track classes with between 32.43 and 45.71 percent white students. The other, a low track class, had 66.67 percent white students.

These four classes, however, shared some common characteristics. All four were located in the same community, a middle to upper middle class suburb of a large city. The minority students were middle and upper-middle class Black students voluntarily bused to the school. At the other four multiracial schools, the minority populations were considerably less affluent. Additionally, three of these four non-conforming classes were elective subjects--speech, journalism, and creative writing. Only one was a standard language arts class, and that class

Table 1

Distribution of Race Among High, Average, and Low Track English Classes in Six Multiracial Schools

Track Level of Class	Race of Students White	 Minority	Total
High	130 (62%)	81 (38%)	211 (100%)
Average	118 (47%)	134 (53%)	252 (100%)
Low	40 (29%)	96 (71%)	136 (100%)

$\chi^2 = 34.622$, $p < .001$ (2df)

had the largest white population of any of the four (45.71 percent).

Math classes, too, evidenced this disproportionate allocation of racial groups in Track levels. An average of 60 percent of the students in high track math classes at the six schools were white. And, in contrast, only 37 percent of the students in the low track math classes were white. As with the English classes, these percentages differ markedly from the percentage of white students in the total population at these multiracial schools (Table 2).

Six high track and twelve low track math classes were included in the sample at these schools. Of these eighteen math classes, only five did not follow the predominant pattern in racial composition--larger percentages of white students in high track classes and smaller percentages of whites in low track classes than in the total population. Of these five non-conforming classes two were high track classes--one with 44 percent white and one with 29 percent white--and three were low track classes with the percentages of whites ranging from 55 to 65 percent. As with the exceptional English classes, three of these five math classes were located in the community with the more affluent black students.

From the data about these six schools, then, it is evident that, in the Study of Schooling sample too, in multiracial schools with tracking, minority students were found in disproportionately small percentages in high track classes and in disproportionately large percentages in low track classes. Moreover, this pattern was most consistently found in schools where minority students were also poor. These findings are consistent with virtually every study that has considered the distribution of poor and minority students among track levels in schools.

Table 2

Distribution of Race Among High, Average, and Low Track Math Classes in Six Multiracial Schools

Track Level of Class	Race of Students White	 Minority	Total
High	68	46	114
	(60%)	(40%)	(100%)
Average	111	82	193
	(58%)	(42%)	(100%)
Low	83	143	226
	(37%)	(63%)	(100%)

$X^2 = 24.39$, $p < .001$ (2df)

Tracking and Classroom Processes

The findings from the discriminant analyses relating to the research questions discussed in Chapter III comprise the remainder of this chapter.[1] The five analyses of classroom processes and resulting findings are organized into sections around the following constructs: 1) curricular content, 2) instructional practices, 3) teacher-student relationships and teacher affect, 4) student-peer relationships and student affect, and 5) student involvement in learning activities. The last section of the chapter will include a presentation of the findings regarding tracking and student attitudes.

Differences in Curricular Content

The first objective of the study was to explore the distribution of the quantity and quality of school knowledge among different groups of students in schools and to assess the impact on educational equity of any differential distribution found. Two research questions to be answered with the data were developed from this objective: 1) Does the curriculum of classes at various track levels vary in the amount of time spent on instruction as opposed to other activities? 2) Does the curriculum of classes at different track levels vary in the type of instructional content made available to the students in them?

A multiple-discriminant analysis was performed using SPSS subprogram Discriminant (Klecka, 1975) including seven variables in the analysis: topics of classroom instruction, cognitive levels of skills and activities listed by teachers, teachers' expectations for students' homework time, teachers', students', and observers' perceptions of the relative amount of class time spent on instruction (FMI data), and observers' reports of class time spent in non-instructional activity (snapshot data).

Significant differences were found among track levels in both subject areas at both the senior and junior high levels separately as well as over all classes on the seven variables together. The test of the equality of group centroids was measured by the Wilks' lambda statistic which was then converted to a chi-square significance test (Tables 3 and 4). While it is important to note that significant differences among track levels were found over all secondary classes--an indication that the direction of differences were similar at the two levels--the most accurate descriptions of the nature of the group differences are obtained from the separate analyses at the two levels. Therefore, while the overall significant differences are noted, the discussion of these differences will include only the level analyses.

The first discriminant function, derived from the curricular content analyses at both levels (senior high and junior high) in both subjects accounted for the majority of the variance among the three track levels. Figures in Tables 3 and 4 show the significance of the information remaining after the first discriminating functions were derived. In all four level analyses the information remaining was not statistically significant, indicating that the second functions derived were relatively useless in describing differences among track levels. As a result, the second functions were ignored in the interpretation of track level differences.

The discriminant function statistics presented in Tables 5, 6, 7 and 8 describe the ability of the functions derived to discriminate among track levels in each sample of classes. The eigenvalue is a measure of that part of the total variance existing in the discriminating variables associated with the function. Because the sum of the eigenvalues for all functions is the total variance, the relative percentage

Table 3

Significance Tests for Discriminant Analyses--Tracked English Classes on Curricular Content Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.39	46.48*	14
	1	.91	4.67	6
Junior High Classes	0	.28	42.32*	14
	1	.88	4.36	6
All Secondary Classes	0	.38	84.91*	14
	1	.92	7.51	6

* Significant at .001 level

Table 4

Significance Tests for Discriminant Analyses--Tracked Math Classes on Curricular Content Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.27	65.50**	14
	1	.82	9.74	6
Junior High Classes	0	.30	42.94**	14
	1	.75	9.93	6
All Secondary Classes	0	.40	83.21**	14
	1	.85	15.25*	6

** Significant at the .001 level

* Significant at the .05 level

Table 5

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track English Classes on Curricular Content Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables: Function 1	Function 2
Topics of Instruction	.73	.03
Expected Homework Time	.65	-.45
Cognitive Levels of Skills	.54	.02
Students' Estimates--Time on Instruction	.49	.38
Teachers' Estimates--Time on Instruction	.22	-.08
Observed Time on Instruction	.06	.71
Observed Non-Instructional Activity	.09	-.31
Discriminant Function Statistics		
Eigenvalue	1.36	.10
Relative Percentage	93.13%	6.87%
Canonical Correlation	.75	.30
Group Centroids (Means)		
High Track	1.16	0.49
Average Track	0.15	-0.28
Low Track	-2.08	0.17

* See Chapter IV for details on the measurement of these variables.

Table 6

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track English Classes on Curricular Content Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Topics of Instruction	.91	-.18
Cognitive Levels of Skills	.62	.20
Student Estimate--Time on Instruction	.34	.14
Expected Homework Time	.40	.67
Teacher Estimate--Time on Instruction	.23	-.41
Observed Non-Instructional Activity	.02	.29
Observed Time on Instruction	.06	-.14
Discriminant Function Statistics		
Eigenvalue	2.16	.14
Relative Percentage	93.86%	6.14%
Canonical Correlation	.83	.35
Group Centroids (Means)		
High Track	1.66	-0.42
Average Track	0.44	0.51
Low Track	-1.68	-0.07

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[*] See Chapter IV for details on the measurement of these variables.

of the total eigenvalues listed for each function represents the percentage of variance accounted for by that function. The canonical correlation is a measure of association between track levels and the discriminant function. From these statistics, then, it is clear that the first function accounted for nearly all the variance among tracks and that the function was highly associated with tracking at both levels in both English and mathematics. Thus, we can conclude that there were significant differences among track levels in curricular content as defined by the variables and that the first function derived from the discriminant analyses of tracking and these variables can be used to characterize these differences efficiently.

The nature of the first function and the associated track differences can best be explained by examining the rotated correlations between the first cannonical discriminant function and the discriminating variables. While it is the set of variables acting together that produces the differences among groups, those with the largest correlations can be considered to be contributing the most to these differences, for purposes of interpretation. Looking at these correlations for senior and junior high tracked English classes in Tables 5 and 6 it is clear that at both levels differences in topics of classroom instruction and the cognitive levels of skills presented contributed a great deal to the separation among tracks at both levels, with these variables seeming to be somewhat more important as discriminators at the junior high than at the senior high level. At the senior high level teachers' expectations for homework time contributed more importantly to the separation of tracks than they did at the junior high level. At both levels teachers' and students' estimates of the relative

Table 7

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track Math Classes on Curricular Content Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Topics of Instruction	.98	.03
Time on Instruction (Observed)	.21	.06
Time on Instruction (Student)	.37	.73
Expected Homework Time	.18	.55
Non-Instructional Activity (Observed	-.06	-.40
Time on Instruction (Teacher)	.24	.38
Cognitive Level of Skills	.04	-.13
Discriminant Function Statistics		
Eigenvalue	2.05	0.21
Relative Percentage	90.50%	9.50%
Canonical Correlation	.82	.42
Group Centroids		
High Track	1.23	0.61
Average Track	0.48	-0.57
Low Track	-2.02	-0.15

Table 8

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track Math Classes on Curricular Content Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Topics of Instruction	.70	.17
Cognitive Levels of Skills	.28	-.11
Time on Instruction (Observed)	-.20	.06
Expected Homework Time	.19	-.05
Time on Instruction (Teacher)	.04	0.0
Non-Instructional Time	.10	-.19
Discriminant Function Statistics		
Eigenvalue	1.50	0.32
Relative Percentage	82.52%	17.48%
Canonical Correlation	.77	.49
Group Centroids		
High Track	0.77	0.86
Average Track	0.57	-0.61
Los Track	-1.72	-0.55

amount of class time spent on instruction contributed somewhat to the differentiation among track levels. At neither level did the observed time on instruction nor the observed frequency of non-instructional activities contribute much to track separation.

The group centroids (standardized mean scores for each track level on the function) show the direction of the differences among tracks. At both secondary levels, high track classes had higher mean scores on the first function than did the groups of average and low classes. Thus, high track classes at both levels were distinguished from the others by more of an orientation toward college preparatory topics: the reading of standard works of literature and literary study, expository writing, grammar as language analysis, preparation for Scholastic Aptitude Tests, and language study. These high track classes were less likely to be taught basic reading skills, simple narrative writing, functional literacy skills (filling out forms, etc.), language mechanics, standard usage, and listening than were average or low track classes. In addition, teachers of high track classes reported they had students do activities that require higher levels of cognitive skill than did other teachers. More class time was spent on instruction in high than in average or low track classes--according to both teachers and students; more homework time was expected of students in these classes as well. Although the centroids for average classes at both levels were almost equidistant from those of the high and low tracks, they were somewhat closer to the means for the high than for the low tracks. This indicates that average classes tended to be more like high than low track classes on the variables that contributed most to the discriminant function.

Information about the sampled math classes is shown in Tables 7 and 8. As with the English classes, among math classes at both levels the topics of instruction is the variable that appears to have contributed most importantly to the separation of track levels. The cognitive complexity of tasks was not nearly as important a discriminator in math as in English classes; only at the junior high level were differences in this area noticeable. At the senior high level, variables assessing time spent on instruction functioned to differentiate among track levels. This, however, was not the case among junior high school classes. At neither level did teachers expectations for homework time or time spent in non-instructional activity contribute much to track separation.

The group centroids for math classes, like those for the English sample, were highest for high track classes and lowest for low track classes. The average track mean at the junior high level was quite close to that of high track classes, and at both levels average classes were closer to high than to low classes. Thus high, and to a somewhat lesser extent average classes, were distinguished from low track classes by instructional topics that focused on the ideas of mathematics, mathematical processes and the application of these to other scholarly disciplines. Low track classes, on the other hand, were more characterized by practical arithmetic topics: basic computation facts, simple measurement, and the application of these to everyday life situations. At the junior high level, teachers of high and average track classes were more likely to have included instructional activities at a higher level of cognitive complexity than were low track teachers. More class time appears to have been spent on instruction in high than in average or low track classes at the senior high level. From the distance between the group centroids, it is clear that more separation occurred among tracks at the senior high than at the junior high level.

Thus, it is clear that in both subjects track levels differed both in the quality of the instructional content and in the time students spent in instructional activity with the most separation occurring between high and low track classes. Average track classes, while tending toward the middle, were more like high than low track classes on this dimension of classroom properties.

The answer to the first research question, then, is that generally the curriculum of classes at different track levels did vary in the amount of time spent on instruction relative to time spent in other activities. And in answer to the second research question, the classes at various track levels varied as well in the type of instructional content made available to them.

The power of the discriminant functions to distinguish among classes at different track levels on these content variables was further checked with the classification phase of the discriminant analysis. Tables 9, 10, 11 and 12 contain the number and percentages of classes at each track level that would be classified as high, average, or low track based only on their scores on the discriminating variables and not on their known track membership. It should be noted that the prior probability of any class being correctly classified, given the three track levels, is one third. Thus, the percentages of classes correctly classified beyond that percentage can be attributed to the efficacy of the derived discriminant functions.

At the senior high school level, 76.79 percent of the English classes and 70.69 percent of the math classes were correctly classified,

Table 9

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High English Classes on Curricular Content Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	16	13 81.3%	3 18.8%	0 0.0%
Average Track	29	6 20.7%	20 69.0%	3 10.3%
Low Track	11	0 0.0%	1 9.1%	10 90.9%
Heterogeneous	21	5 23.8%	13 61.9%	3 14.3%

Percentage of Tracked Classes Correctly Classified: 76.79%

Table 10

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High English Classes on Curricular Content Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	13	9 69.2%	4 30.8%	0 0.0%
Average Track	13	5 38.5%	7 53.8%	1 7.7%
Low Track	16	0 0.0%	1 6.3%	15 93.8%
Heterogeneous	20	10 50%	4 20.0%	6 30.0%

Percentage of Tracked Classes Correctly Classified: 73.81%

Table 11

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High Math Classes on Curricular Content Dependent Variables

Actual Group	N of Classes	Predicted Track Membership High	 Average	 Low
High Track	22	20 90.9%	2 9.1%	0 0.0%
Average Track	18	9 50.0%	7 38.9%	2 11.1%
Low Track	18	0 0.0%	4 22.2%	14 77.8%
Heterogeneous	9	0 0.0%	3 33.3%	6 66.7%

Percentage of Classes Correctly Classified: 70.69%

Table 12

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High Math Classes on Curricular Content Dependent Variables

Actual Group	N of Classes	Predicted Track Membership High	Average	Low
High Track	17	15 88.2%	2 11.8%	0 0.0%
Average Track	15	5 33.3%	10 66.7%	0 0.0%
Low Track	12	0 0.0%	1 8.3%	11 91.7%
Heterogeneous	16	6 37.5%	6 37.5%	4 25.0%

Percentage of Classes Correctly Classified: 81.82%

more than twice the percentage expected by chance alone. Prediction was most accurate for high and low track classes--81.3 percent and 90.9 percent respectively in English and 90.9 percent and 77.8 percent in math. The inaccurate classifications for both these groups were the identification of a small percentage of them as average classes. No high track classes were classified as low. Nor, were any low track classes classified as high. Average classes were predicted with the least accuracy. Although, still more than twice the percentage of average English classes than would have been expected according to prior probabilities were correctly classified. More than twice as many average track classes in the two subjects were classified as high than as low track, supporting the information provided by the group centroids that average classes tended to be more like high than low classes on this set of variables.

The same patterns emerged at the junior high school level. More than twice the expected percentage of tracked classes were correctly classified. High and low track classes were more accurately classified than were average classes. The classification of low track classes at this level was especially accurate. No high track class was classified as low. And, as with the senior high classes, no low track class at the junior highs was classified as high. The highest percentage of misclassifications occurred for average track classes. Considerably more of the misplaced average classes were designated as high rather than low track. Again, at this level, this is reflective of the smaller distance between average and high track centroids than between those of the average and low tracks.

Important information about these curriculum content variables in heterogeneous classes was gained from these classification tables as well. By examining the percentages of heterogeneous classes that were classified as high, average, or low at each level, we can gain some information regarding what curricular content--as here defined--was like in heterogeneous classes and which track level heterogeneous classes seem to most resemble on this dimension.

At the senior high level 61.9 percent of the heterogeneous English classes were classified as average track, indicating that at this level heterogeneous groups tended to have scores on the discriminating variables like those of average track classes. However, while 23.8 percent of these heterogeneous classes were classified as high track, only 14.3 percent were identified as low. So, at this level, it seems clear that heterogeneous English classes tended to be more like high than low track classes on this set of variables.

A slightly different pattern emerged from the classification of heterogeneous classes at the junior high level. Only 20 percent of these classes were identified as average. On the other hand, 50 percent were classified as high track. Additionally, nearly twice as many heterogeneous classes at this level were classified as low than as average. However, at this level too, scores of heterogeneous classes tended to be more like those of high rather than low track classes on these curricular content variables.

At the junior high level heterogeneous math classes followed much the same pattern as heterogeneous English classes. 75 percent of these classes were identified as being most like high or average classes. And, because of the closeness of the group centroids for these two track levels, those classified as average were far more like high than like low track classes. In contrast, quite a different pattern was found among heterogeneous math classes at the senior high level. None was classified as high track and two-thirds were identified as most like low classes.

These classification statistics point clearly to the apparent separation of most low track classes from all other groups of classes on this set of variables, indicating that the quantity and quality of instruction may have been quite distinct in low track classes. Of the total senior high classes that were not actually low track, only 12 percent were classified as such. Moreover, only 17 percent of the low track classes were inaccurately classified. At the junior high level a similar result was obtained. Of the high, average, and heterogeneous classes only 12 percent were identified as low track. And only 7 percent of the low track classes were identified as in any other group.

On these curricular content variables, at least, the low track classes stood out from the other classes in the sample. Low track classes were distinctly lower in the proportion of overall time spent on learning activity and qualitatively different in the type of instructional topics and activities available to the students in them.

Additionally, one other curricular content variable was considered as a possible contributor to this aspect of track level differences. The non-subject-specific behaviors mentioned as desired learnings by 45 percent of the senior high teachers and 35 percent of the junior high/middle school teachers were examined to determine whether significant differences occurred in the type of general behaviors that were encouraged by teachers in classes at different track levels.

Mean ratings on this variable were used to describe the central tendencies within tracks and the differences among them. The following ranges are useful in interpreting the mean ratings of these behaviors emphasized by teachers.

Range of Mean Ratings	Type of Behavior Emphasized
4.00 - 5.00	Emphasis on student independence
2.00 - 3.99	Equal emphasis or ambiguous statements
1.00 - 1.99	Emphasis on student conformity

The mean ratings for tracked and heterogeneous English classes at the two levels of schooling are presented on the following two pages. should be kept in mind throughout this discussion, however, that fewer than half of the teachers at each level were included in these analyses.

Significant differences in mean ratings among track levels occurred at both schooling levels in English, although the differentiation was greater at the junior high than at the senior high level. The high track mean at the senior high level falls in the "emphasis on student independence" range, the average track mean at the top of the "equal emphasis" range, and the low track mean at the bottom of the "equal emphasis" range. Like average track classes, the mean rating for heterogeneous classes lies in the upper half of the "equal emphasis" range. The same pattern resulted at the junior high level although the means for all groups are lower than at the senior high level. The high track mean falls near the top of the "equal emphasis" range, the average track mean in the lower half of that range, and the low track mean in the "emphasis on conformity" range. The mean for heterogeneous classes falls within the "equal emphasis" range at this level, as well.

Table 13a

Mean Ratings of Senior High English Classes on Type of Non-Subject-Specific Behaviors Emphasized by Teachers

Type of Class	$\bar{X}$	SD	N
High Track	4.20	1.40	10
Average Track	3.80	1.69	10
Low Track	2.00	1.67	6
Heterogeneous	3.40	1.58	10

F (tracked classes only) = 3.873, $p < .05$

Table 13b

Mean Ratings of Junior High English Classes on Type of Non-Subject-Specific Behaviors Emphasized by Teachers

Type of Class	$\bar{X}$	SD	N
High Track	3.80	1.79	5
Average Track	2.67	0.82	6
Low Track	1.22	0.67	9
Heterogeneous	2.33	1.63	6

$\underline{F}$ (tracked classes only) = 9.718, $\underline{p} < .01$

It is clear that, at both schooling levels, English teachers who emphasized the learning of non-subject-specific behaviors had different types of behaviors as goals for classes at different track levels. Teachers of high track classes were more likely to emphasize such behaviors as critical thinking, individual work, active participation, self direction, and creativity than were teachers of other groups. Teachers of low track classes, on the other hand, were more likely than others to stress more compliant behaviors with their students: getting along with others, working quietly, improving study habits, punctuality, and conforming to rules. Average track and heterogeneous classes at the senior high level were more like high track than low track classes in this respect. At the junior high level, average track and heterogeneous classes were not noticibly closer to either the high or low track classes on this variable.

Among the math classes the findings were quite different from those in the English analyses. The mean ratings for tracked and heterogeneous math classes are presented in Tables 14a and 14b. Again, as with the English analyses, it should be remembered that fewer than half of the math teachers are included in these analyses.

No significant differences among track levels were found at either level of schooling in math. Even so, the trends exhibited by the mean scores at the senior high school level are the same as the patterns found in the English analyses. However, the means for all groups in math fall at various points within the "equal emphasis or ambiguous statements" range. It appears that the group of math teachers who emphasized the learning of non-subject-specific behaviors did not consistently emphasize either student independence or student conformity.

Table 14a

Mean Ratings of Senior High Math Classes on Type of Non-Subject-Specific Behaviors Emphasized by Teachers

Type of Class	$\bar{X}$	SD	N
High Track	3.00	1.41	9
Average Track	3.20	0.63	10
Low Track	2.00	1.41	10
Heterogeneous	2.60	1.67	5

$\underline{F}$ (tracked classes only) = 2.833 (p = .08)

Table 14b

Mean Ratings of Junior High Math Classes on Type of Non-Subject-Specific Behaviors Emphasized by Teachers

Type of Class	$\bar{X}$	SD	N
High Track	2.33	1.63	6
Average Track	2.00	1.15	4
Low Track	2.80	1.14	10
Heterogeneous	2.14	1.07	7

$\underline{F}$ (tracked classes only) = 0.607 ($p = .56$)

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While the standard deviations indicate that there was considerable variation in the type of behaviors emphasized by these teachers, this emphasis did not vary systematically by track level.

In this aspect of curricular content, too, clear differences in English track levels occurred at both schooling levels. And, at the high school level, it again appears that low track classes were distinctly different from all other groups in the type of instructional content presented to them by teachers. In math, only the non-significant trends in the data at the senior high school level support this isolation of the low track in this aspect of curricular content.

Differences in Instructional Practice

The second objective of the study was to explore the ways the distribution of school knowledge may differ among track levels of classes through the instructional techniques and behaviors employed by teachers. This exploration was pointed at the discovery of whether any differences in instructional practice contributed to educational inequity. Inequity would be likely if exposure to practices which have been identified in the literature as effective was limited to certain groups of students within schools. Three research questions to be answered with the data were generated from this objective: 1) Does teacher variability, including the variety, extent, and type of instructional activities, materials, grouping, and teacher assistance vary with the track level of classes? 2) Does the clarity of teacher instruction vary with the track level of classes? 3) Does teacher enthusiasm vary with the track level of classes?

A multiple discriminant analysis was performed on track level and instructional practice using thirteen discriminating variables in the analysis. Included were: students' levels of agreement with the statement that their teacher was willing to try different ways of doing things; teacher, student, and observer reports of the variety of materials and learning activities done in class; reports of the observed variety of grouping; student scores on two learning environment scales reporting teacher clarity, one focused on the clarity of teachers' verbal instructions and the other concerned with the clarity of classroom organization; student responses to two items about teacher clarity--"This teacher tells us ahead of time what we are going to be learning about" and "Everyone in this class knows what we may or may not do:" and student scores on a learning environment scale assessing student perceptions of teacher enthusiasm.

Significant differences were found among track levels on the thirteen variables both at the senior and junior high levels separately as well as over all secondary English and math classes. The results of the tests of the equality of group centroids--Wilks' lambda statistics converted to chi-square significance tests--are shown in Tables 15 and 16.

As with the analyses of the curricular content variables, the first discriminant functions derived from the three analyses of the thirteen instructional practices variables accounted for the majority of variance among the three track levels. Figures in Table 15 show that the information remaining after the removal of the first function in each analysis of English was not statistically significant, indicating that, again, the second functions derived were relatively useless in explaining differences among the three tracks. As in the curricular content analyses, therefore, the second functions derived in the instructional practice analyses were ignored in the interpretation of track level differences among the English sample. While the first

Table 15

Significance Tests for Discriminant Analyses--Tracked English Classes on Instructional Practices Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.30	55.60*	26
	1	.67	18.27	2
Junior High Classes	0	.21	46.57*	26
	1	.78	7.45	2
All Secondary Classes	0	.38	82.89*	26
	1	.79	20.05	2

* Significant at .001 level

Table 16

Significance Tests for Discriminant Analyses--Tracked Math Classes on Instructional Practice Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.28	60.00^{**}	26
	1	.64	20.97^{*}	12
Junior High Classes	0	.30	40.05^{*}	26
	1	.64	14.70	12
All Secondary Classes	0	.41	78.29^{**}	26
	1	.72	28.68^{*}	12

** Significant at the .001 level

* Significant at the .05 level

function derived from the junior high math analysis followed this same pattern, both functions were significant at the senior high school level (Table 16). Therefore, in the discussion of track level differences among math classes at the senior high school level, both discriminant functions will be considered.

The discriminant function statistics presented in Tables 17, 18, 19 and 20 report the ability of the derived functions to discriminate among track levels in the area of instructional practice--as defined by the variables included. From the size of the eigenvalues and the relative percentages of variance accounted for, it can be determined that the first function accounted for nearly all the variance among English classes at the junior high level and a substantial portion of the variance in the other three groups. The canonical correlations show the strong associations between the first functions and tracking. Again, however, the two are most highly associated among junior high English classes. Thus, as with curricular content, we can conclude from these statistics that there were significant differences among track levels in instructional practice and that the first functions derived from the discriminant analyses of tracking and this group of variables can be used to explain these differences efficiently for both levels in English and for junior high math. Both functions are necessary to understand track differences in senior high math.

The substance of these functions and the associated track differences at the two schooling levels are revealed by the rotated correlations between the functions and the discriminating variables reported in Tables 17, 18, 19 and 20. Again, while it was the set of variables which produced the differences among groups, the single

Table 17

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track English Classes on Instructional Practices Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Everyone knows what may be done	.49	.21
Variety of Activities	-.36	.08
Teacher tells what is to be learned	.35	.00
Organizational Clarity	.31	.10
Teacher Enthusiasm	.22	.14
Use of Supp. Materials	-.14	.11
Variety of Grouping	.11	.61
Variety of Activities (Observed)	.01	.48
Teacher willing to try different ways	.08	.35
Variety of Materials (Student)	-.19	.35
Variety of Activities (Teacher)	.02	-.26
Variety of Materials (Teacher)	-.02	.24
Verbal Clarity	.02	.11
Discriminant Function Statistics		
Eigenvalue	1.25	.49
Relative Percentage	71.96%	28.04%
Canonical Correlation	.75	.57
Group Centroids (Means)		
High Track	1.58	0.24
Average Track	-0.37	-0.59
Low Track	-1.36	1.17

* See Chapter IV for details on the measurement of these variables.

Table 18

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track English Classes on Instructional Practices Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
	Function 1	Function 2
Variety of Materials (Student)	-.61	.07
Organizational Clarity	.47	.21
Teacher Enthusiasm	.40	.06
Teacher willing to try different ways	.31	-.20
Verbal Clarity	.30	.04
Variety of Grouping	-.22	-.06
Use of Supp. Materials	-.02	-.02
Teacher tells what is to be learned	.04	.32
Everyone knows what may be done	.13	.30
Variety of Materials (Teacher)	-.16	-.21
Variety of Activities (Observed)	.01	-.16
Variety of Activities (Teacher)	.10	-.14
Variety of Activities (Student)	.01	.05
Discriminant Function Statistics		
Eigenvalue	2.68	.28
Relative Percentage	90.50%	9.50%
Canonical Correlation	.85	.47
Group Centroids (Means)		
High Track	1.15	1.51
Average Track	0.86	-0.27
Low Track	-1.16	-0.98

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*See Chapter IV for details on the measurement of these variables.

Table 19

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track Math Classes on Instructional Practices Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Variety of Materials (Student)	.53	.33
Variety of Materials (Teacher	.26	-.01
Variety of Activities (Teacher)	-.25	-.01
Variety of Grouping (Observed)	.24	-.11
Use of Supp. Materials (Observed)	-.11	.10
Organizational Clarity	.11	.61
B46	-.12	.54
Teacher Enthusiasm	-.19	.50
Verbal Clarity	.16	.34
B55	.08	.31
Variety of Activities (Observed)	.24	-.28
B26	-.07	.28
Variety of Activities (Student)	-.02	.07
Discriminant Function Statistics		
Eigenvalue	1.29	0.56
Relative Percentage	69.73%	30.27%
Canonical Correlation	.75	.60
Group Centroids		
High Track	-0.90	0.94
Average Track	-0.45	-0.96
Los Track	1.58	-0.14

Table 20

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track Math Classes on Instructional Practices Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Organizational Clarity	.70	.15
Teacher Enthusiasm	.62	.08
Teacher tells what is to be learned	.37	0.0
Verbal Clarity	.35	.17
Everyone knows what may be done	.32	-.02
Use of Supp. Materials (Observed)	-.27	-.18
Variety of Activities (Observed)	.17	-.02
Variety of Activities (Student)	.17	.61
Variety of Materials (Student)	.03	.60
Variety of Materials (Teacher)	-.12	.54
Teacher willing to try different ways	.27	.51
Variety of Activities	.04	.25
Variety of Grouping (Observed)	0.0	.15
Discriminant Function Statistics		
Eigenvalue	1.16	0.56
Relative Percentage	67.31%	32.69%
Canonical Correlation	.73	.60
Group Centroids		
High Track	1.08	-.64
Average Track	-1.24	-.31
Low Track	-0.19	1.24

variables with the largest correlations can be considered, for interpretative purposes, as those that contributed most to the differences.

The examination of these correlations reveals some differences in the discriminant functions--and, as a result, in track level differences--between the two subjects and at the two schooling levels. In English at the junior high level, student reports of the variety of materials appears to have been the single largest contributor to group differences, while at the senior high level, this variable seems to have been far less meaningful. In contrast, in English at the senior high level, student reports of the variety of activities done was more strongly associated with the first function and track differences than at the junior high level where there was no correlation between the two. At both levels, however, of the variables concerning teacher variability, most did not contribute importantly as discriminators among track levels. In contrast, in math at the senior high level, the teacher variability variables were those that most clearly defined the first discriminant function and accounted for much of the variance among track levels (Table 19). Math at the junior high level followed a pattern closer to those in the English analyses. The variables measuring teacher variability were the least important in contributing to the separation among track levels (Table 20).

At both levels in both subjects the variables involving clarity were important in discriminating among track levels. The teacher enthusiasm variable seems to have been important too, although it does not appear to have discriminated as well as those variables measuring clarity.

The group centroids at both levels, displayed in Tables 17 and 18, show that in English at both levels the groups of high track classes had higher mean scores on the first discriminant function than did the other groups. At both levels, as well, the groups of low track classes had the lowest group centroids. Thus, at the senior high level high track English classes were characterized by higher levels of teacher clarity and teacher enthusiasm and lower student estimates of the variety of activities engaged in than were average or low track classes. The centroids also reveal that, while the average classes tended to have higher scores on this function than did low track classes, the mean for average classes was somewhat closer to that for low than for high track classes. This indicates that average classes tended to be slightly more like low track classes on this instructional practice dimension than they were like high track classes.

This pattern did not result in English at the junior high school level. While the group of high track classes had the highest mean score on the first function, the score for the group of average classes was only slightly lower. The mean for the group of low track classes, on the other hand, was considerably lower than those of the other two groups. As a result, we can conclude that high and average track classes were more likely to have had higher levels of teacher clarity, enthusiasm, and willingness to try different instructional approaches than were low track classes. At the same time, these two track levels were less likely to have been characterized by the use of a variety of materials than were low track classes.

The group centroids in math reveal a slightly different pattern of differences among track levels (Tables 19 and 20). At the junior high school level, while the high track classes had the highest mean score on the first discriminant function, the average track had the lowest, with the low track mean nearly equidistant from those of the high and low tracks. This indicates, that among junior high math classes, too, the high track group was the most characterized by teacher clarity in the organization of instruction and verbal communication and by teacher enthusiasm. Both the average and low tracks had considerably lower scores on this dimension. The low track group, however, was more characterized by these instructional practices than was the group of average math classes at this level.

Considering the two discriminant functions together, it appears that senior high math tracks exhibited a pattern similar to that found at the junior high school level (Figure 1). High track classes were more characterized by clarity and enthusiasm than were either the average or low groups, as evidenced by the considerably higher mean score on the second discriminant function of the high group. Again, the average track was less characterized by these instructional practices than was the group of low classes. Unlike in the junior high classes, however, differences in teacher variability also contributed to the separation of senior high math tracks. The low track group, as in junior high English classes, was the most characterized by aspects of teacher variability while the high track classes evidenced this instructional practice the least.

From the discriminant phase of these analyses, then, it is clear that in both subjects and at both schooling levels, classes at different track levels differed--although not in exactly the same ways--in the instructional practices teachers used with them. In all four analyses, high track classes appear to have been distinctly different from low and average groups in that they were consistently characterized by higher levels of organizational and verbal clarity and by teacher enthusiasm

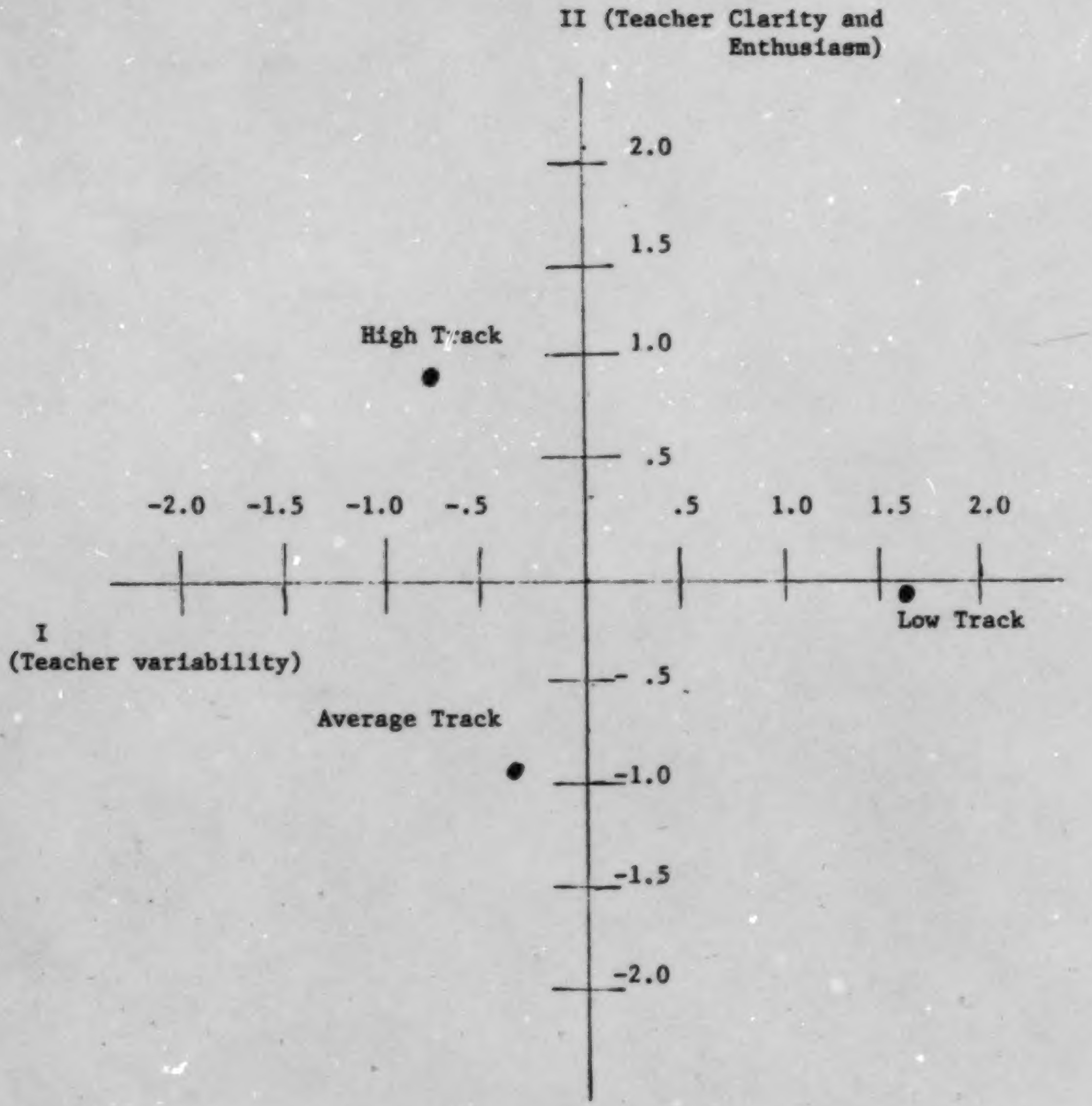

Figure 1. Group Centroids on Discriminant Functions 1 and 2 for Track Levels of Senior High Math Classes on Instructional Practice Variables

than were the other two tracks. Moreover, in the analyses of English classes, average classes as well were higher in these characteristics than were the low track. In all of the analyses, a few of the teacher variability measures also served to separate tracks. Low track classes were the highest in these aspects of this instructional practice.

The answer to the first research question, then, is that in math and in junior high English, differences in teacher variability were found principally the form of the variety of materials available to students in classes at different track levels. In English at the senior high level, track level differences with regard to teacher variability were found only in that track levels varied meaningfully in student perceptions of the variety of learning activities done in class. In answer to the second question, at both schooling levels teacher clarity varied markedly among track levels. And, in answer to the third research question, track levels differed, as well, in teacher enthusiasm.

The classification phase of the instructional practice analyses showed that of the tracked classes, 77.97 percent of English and 78.95 percent of math classes at the high school level and 86.05 percent of English and 72.34 percent of math classes at the junior high school level were correctly classified into track levels based on their scores on the discriminating variables. Again, as with the curricular content variables, these percentages of correct classifications are more than twice the 33.33 percent that would be expected by chance alone. As a result, we can conclude that the instructional practice variables included in the analysis were quite powerful in discriminating among track levels (Tables 21, 22, 23, and 24).

Prediction of correct track level was most accurate in English at the junior high school level. And, at this level, low track classes

Table 21

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High English Classes on Instructional Practices Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	18	14 77.8%	3 16.7%	1 5.6%
Average Track	29	3 10.3%	23 79.3%	3 10.3%
Low Track	12	1 8.3%	2 16.7%	9 75.0%
Heterogeneous	22	9 40.9%	7 31.8%	6 27.3%

Percentage of Tracked Classes Correctly Classified: 77.97%

Table 22

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High English Classes on Instructional Practices Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	14	11 78.6%	3 21.4%	0 0.0%
Average Track	13	2 15.4%	11 84.6%	0 0.0%
Low Track	16	0 0.0%	1 6.3%	15 93.8%
Heterogeneous	23	3 13.0%	8 34.8%	12 52.2%

Percentage of Tracked Classes Correctly Classified: 86.05%

Table 23

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High Math Classes on Instructional Practices Dependent Variables

Actual Group	N of Classes	Predicted Track Membership High	Average	Low
High Track	21	17 81.0%	3 14.3%	1 4.8%
Average Track	19	2 10.5%	14 73.7%	3 15.8%
Low Track	17	0 0.0%	3 17.6%	14 82.4%
Heterogeneous	9	4 44.4%	3 33.3%	2 22.2%

Percentage of Classes Correctly Classified: 78.95%

Table 24

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High Math Classes on Instructional Practices Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	18	14 77.8%	2 11.1%	2 11.1%
Average Track	14	1 7.1%	9 64.3%	4 28.6%
Low Track	15	1 6.7%	3 20.0%	11 73.3%
Heterogeneous	17	9 52.9%	4 23.5%	4 23.5%

Percentage of Classes Correctly Classified: 72.34%

were most often correctly classified (93.8 percent). Only one low track class was incorrectly classified. The separation between the low track group and the average and high groups are revealed in this classification process as well. No high track class was classified as belonging in the low track. No low track class was classified as high. Supporting the closeness of the high and average tracks revealed by the group centroids is the result that when average classes were misclassified they were predicted to be in the high rather than the low group.

Different patterns emerged from the classification phase of the other analyses. The slightly less clear differentiation among tracks and the relatively equal separation among groups found in the group centroids and discriminant function statistics were seen in the classification phase of the senior high English analysis. Classes at each track level were reclassified correctly with approximately the same level of accuracy. One high track class was misclassified as low, and one low track class was misclassified as high. Equal numbers of average classes were misclassified as high and low track classes.

The classification of math classes was most accurate for high and low track classes. But, at both levels average and low classes were more likely to be misclassified as each other than was either group likely to misclassified as high. In this way, the classification phase of the math analyses creates an impression of the high track as being somewhat distinct from the other track levels on this dimension as only four tracked classes at both levels were misclassified as high; far more tracked classes were misclassified as average or low track.

In both English and math, then, we can see a clear separation between high and low tracks. Across all of the analyses only 6 percent

(4 classes) of the high track group were misclassified as low track. And, of the low track classes only 3 percent (2 classes) were identified as high.

Important information about instructional practice in the sample of heterogeneous classes emerged from the classification phases of the analyses as well. The figures in Tables 21, 22, 23, and 24 reveal the patterns in the classification of heterogeneous classes that occurred in the two subjects at the two schooling levels. In three of the analyses, only about one-quarter of the heterogeneous classes were classified as low track while 52.2 percent of these classes were so identified in junior high school English. Furthermore, large percentages of heterogeneous classes in three of the analyses were identified as high track--40.9 percent in senior high English, 44.4 percent in senior high math, and 52.9 percent in junior high math. Only 13 percent of junior high English classes were classified that way. It seems evident that generally, while heterogeneous classes tended to be more like high track classes than either average or low practices considered, in English at the junior high level heterogeneous classes were more likely to resemble low track classes on this dimension.

In sum, the analyses of tracking and instructional practice revealed that in both subjects at both levels, organizational and verbal clarity and teacher enthusiasm were more characteristic of the high track than any other group. Only the variety of materials available to students was consistently indicative of differences in teacher variability among track levels across the sample. Where this differentiation occurred, the low track group was highest on this instructional practice. Among English classes, the average track discriminant function scores fell between those of the high and low tracks. In math, on the other hand, the low track classes held the middle position on two of the three significant functions. This indicates that in math, unlike in English, low classes were somewhat closer to high track classes on some of the dimensions measured. However, the classification phase of the analyses showed a clear separation of high tracks from low over all subjects and levels. The largest percentages of heterogeneous classes in all but the junior high English sample were identified as being more like high than like either average or low track classes.

Differences in Teacher-Student Relationships and Teacher Affect

The third objective of the study was to explore social relationships and personal interactions in classrooms at different track levels. This exploration was aimed at determining whether any differences found served to contribute to educational and societal inequities in that some groups of students may have been led differentially to passivity and alienation from the classroom or to involvement and affiliation with the learning experience. Three distinct research areas developed from this objective: 1) the nature of teacher-student relationships and teachers' affect in the classroom, 2) the character of student-peer relationships and students' affect in the classroom, and 3) the kinds of student involvement in learning interactions in the classroom. Each of these three areas were explored with separate statistical analyses. This first section explores track level differences in teacher-student relationships and teachers' affect in the classroom. The remaining two parts of this section will consider differences in student-peer relationships and student involvement in learning interactions.

A multiple discriminant analysis was performed on tracking and teacher-student relationships and teachers' affect in the classroom.

Seven discriminating variables were included in the analysis: student scores on two learning environment scales: one measuring their perceptions of teachers' concern for students, the other assessing teacher punitiveness in the classroom, and student, teacher, and observer reports of the relative amount of class time spent on student behavior and discipline; and observer reports of the proportion of teacher-student interactions that were characterized by positive or negative teacher affect.

One word of caution should be added concerning this last set of variables. Teacher affect of both the positive and negative type was observed very infrequently in classrooms. For example, a mean of only 1.16 percent of the teacher-student interactions across the four samples of classes in these analyses were observed to include positive teacher affect. Similarly, an average of .83 percent of the total teacher-student interactions were characterized by negative teacher affect. So, while differences in these variables in track levels are important as they may contribute to the description of differences in relationships, their infrequent occurrence warns against placing undue emphasis on these variables alone.

Statistically significant track level differences were found over all secondary English classes but not for each schooling level separately (Table 25). However, since the variables contributed to group separation in slightly different ways at the two schooling levels, it seems important to look at them separately, keeping in mind, however, that probably due to sample size these differences become statistically significant only when the two groups are taken together. Because, however, the discriminant analysis over the two groups tends to average, and thereby blur, the distinctions between them, the discussion of the English sample will be based on the separate analyses of the schooling

Table 25

Significance Tests for Discriminant Analyses--Tracked English Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High	0	.68	18.99	14
Classes	1	.98	1.10	6
Junior High	0	.53	21.13	14
Classes	1	.82	.10	6
All Secondary	0	.65	37.76*	14
Classes	1	.95	4.28	6

* Significant at .001 level

levels. In math, significant differences were found among track levels both at the senior and junior high levels separately as well as over all classes. The results of the significance tests for the math analyses are displayed in Table 26.

The discriminant function statistics presented in Tables 27 through 30 show that at the senior high level the first discriminant functions accounted for nearly all of the variance in the seven variables and was moderately associated with differences in track level. At the junior high level, while a somewhat smaller proportion of the total variance was accounted for by the first functions derived in the analyses than at the senior high school level, these functions had slightly stronger associations with track level differences. From the discriminant function statistics and the significance tests, then, we can conclude that over all classes, significant differences did occur in teacher-student relationships and teacher affect in classes at different track levels and that the first functions derived in the separate analyses can be used to describe the nature of these differences at the two schooling levels.

The rotated correlations between the first canonical discriminant function and the discriminating variables in English at the senior high school level indicate that two types of variables contributed most to the separation of the track levels (Table 27). Reports of the relative amount of time spent on student behavior and discipline from all three data sources (students, teachers, and observers) and student perceptions of their teachers' relationships with them were important discriminators among track levels at the senior high school level. Observed teacher affect of neither type--positive or negative--in teacher-student interactions was very important in the discrimination among track levels.

Table 26

Significance Tests for Discriminant Analyses--Tracked Math Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.53	31.57**	14
	1	.88	6.35	6
Junior High Classes	0	.41	31.75**	14
	1	.77	9.20	6
All Secondary Classes	0	.57	50.92***	14
	1	.83	17.50**	6

*** Significant at the .001 level

** Significant at the .01 level

Table 27

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track English Classes on Teacher-Student Relationships and Teacher Affect Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
	Function 1	Function 2
Time on Behavior--Teacher Estimate	.79	-.01
Time on Behavior--Student Estimate	.66	.53
Teacher Punitiveness	.62	-.11
Observed Time on Behavior	.43	-.11
Teacher Concern	-.25	-.14
Adult Positive Affect--Observed	.07	.51
Adult Negative Affect--Observed	.13	-.28
Discriminant Function Statistics		
Eigenvalue	0.44	0.02
Relative Percentage	95.08%	4.92%
Canonical Correlation	.55	.15
Group Centroids (Means)		
High Track	-0.63	-0.17
Average Track	-0.12	0.14
Low Track	1.21	-0.11

*See Chapter IV for details on the measurement of these variables.

Table 28

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track English Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Teacher Punitiveness	-.89	.04
Teacher Concern	.51	-.01
Adult Positive Affect--Observed	.43	.007
Time on Behavior--Student Estimate	-.04	.83
Time on Behavior--Teacher Estimate	-.27	.63
Observed Time on Behavior	.17	.60
Adult Negative Affect--Observed	.18	.18
Discriminant Function Statistics		
Eigenvalue	0.55	0.22
Relative Percentage	70.96%	29.04%
Canonical Correlation	.60	.43
Group Centroids (Means)		
High Track	0.60	-0.76
Average Track	0.44	0.53
Low Track	-0.83	.18

[*] See Chapter IV for details on the measurement of these variables.

Table 29

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track Math Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Teacher Concern	-.62	-.07
Time on Behavior (Observed)	.44	.33
Positive Teacher Affect	-.18	.02
Time on Behavior (Student)	.48	.71
Teacher Punitiveness	-.14	.66
Time on Behavior (Teacher)	.38	.42
Negative Teacher Affect	.03	.21
Discriminant Function Statistics		
Eigenvalue	0.66	0.14
Relative Percentage	82.90%	17.10%
Canonical Correlation	.63	.35
Group Centroids		
High Track	-0.79	-0.63
Average Track	0.82	0.09
Low Track	0.10	0.68

Table 30

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track Math Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Adult Positive Affect--Observed	.81	-.06
Time on Behavior--Student Estimate	.07	.85
Teacher Concern	.17	-.77
Teacher Punitiveness	.15	.53
Adult Negative Affect	-.25	.30
Time on Behavior--Observed	-.06	.28
Time on Behavior--Teacher	-.02	.27
Discriminant Function Statistics		
Eigenvalue	.87	.29
Relative Percentage	74.95%	25.02%
Canonical Correlation	.68	.47
Group Centroids		
High Track	-0.43	-0.62
Average Track	-0.72	0.58
Low Track	1.40	0.24

At the junior high level in English, the rotated correlations reveal a somewhat different pattern in the differentiation among tracks (Table 28). Student perceptions of teacher concern and teacher punitiveness contributed most importantly to the discrimination. Unlike at the senior high level, however, observed positive teacher affect also was meaningful in contributing to track level separation. Different at this level, too, was the result that, while teacher reports of time spent on behavior and discipline appear to have been an important discriminating variable, neither student nor observed reports of time spent in this way did much to separate junior high classes at different track levels. Similar to the senior high level, however, was the relative unimportance of observed negative affect on the part of teachers.

Among the math classes at the senior high school level, track level differences were characterized by the same types of variables as they were in senior high English. Reports of the time spent on student behavior and discipline from all three data sources and student perceptions of their relationships with teachers were the important variables in this math analysis as well (Table 29).

The rotated correlations reveal a very different pattern among the junior high math tracks. The first discriminant function was most characterized by only the observed teacher affect variables. And, as noted earlier, caution must be exercised in interpreting differences in relationships based on these variables alone because of their infrequent occurrence. Nevertheless, none of the other variables in the analysis, seemed to contribute markedly to track level differences in junior high school math (Table 30).

The group centroids in English at the senior high level show that the high track classes had the lowest mean score on the first function, the average track, the middle score (fairly close to the overall mean of zero), and the low track classes the highest mean score. These scores show, as well, that the average classes at the senior high level were far more similar to high track than to low track classes on this set of variables. Substantively, we can interpret these group centroids to mean that in English high track classes, and to a somewhat lesser extent, average track classes were characterized by less class time spent dealing with student behavior and discipline than were low track classes. Additionally, students in the upper two tracks were far less likely to have viewed their teachers as punitive in the classroom and more likely to see their teachers as concerned about them.

At the junior high level, high and average track classes, as in the instructional practice analysis, had similar centroids, with that of the high track classes only slightly higher than that of the average group. Both were considerably higher than the low track mean. We can infer from these scores that high and average track classes were characterized by less teacher punitiveness and more teacher concern than were low track classes. Additionally, these two groups had teachers who exhibited more positive affect in their interactions with students and reported less time spent on student behavior and discipline than did the teachers of low track classes.

Among the senior high math tracks, the high track group had the lowest group centroid, the average track the highest, and the low track the middle score almost equidistant from the other two. Substantively, these centroids indicate that as in the English analyses, high track classes were characterized by the highest levels of teacher concern and the least class time spent on student behavior of any of the track levels. However, low track classes exhibited more teacher concern and less time on behavior than did average classes. This positioning of low and average classes departs from the pattern found among track levels in English.

At the junior high level in math the low track group had the highest centroid on the first discriminant function, the average track the lowest, and the high track the middle score, with the high track closer to the average than to the low group. We can infer from these scores that junior high school math tracks were differentiated only by differences in the frequency of observed teacher affect. Low tracks were observed to have the most positive teacher affect and least negative teacher affect of the groups. The average group had the least positive and the most negative affect and the high track, while more like the average than low track, was between the two groups on this teacher affect dimension. Although the second discriminant function in this analysis was not statistically significant, it is interesting to note that it follows a pattern similar to that found in the English and senior high math analyses. The centroids on this function, too, indicate that the differences found in the other three analyses can be seen as trends here too--although by no means conclusive (Table 30).

In both subjects and at both schooling levels, it is clear that track levels differed in the nature of teacher-student relationships, both in student perceptions of these relationships and in the relative amount of time spent on student behavior and discipline. It is important to note that, once again, in English the high and average tracks appear to have clustered--more at the junior than senior high level--and been quite different from classes in the low track. On these variables, too, low track classes seem to have been distinctively different from other groupings at both levels. In math, however, this was not the case. At the senior high level, while the high track was clearly separated from the others, the low track was closer to the high track than was the average group. At the junior high level, the results are more difficult to interpret.

The power of the discriminant functions at each level to distinguish among classes at different track levels on these teacher-student relationship and teacher affect variables was further checked with the classification phase of the discriminant analysis. Tables 31 and 32 contain the number and percentages of English classes at each track level which were reclassified as high, average, and low, based on their scores on these discriminating variables. On this dimension, 50.00 percent of the senior high classes and 60.47 percent of the junior high classes were correctly classified into their known track level. While these are greater percentages than would be expected by chance alone (33.33 percent), they are considerably lower than were the percentages of correct classifications made in the curricular content and instructional practice analyses. This indicates that in English, the group of teacher-student relationship and teacher affect variables were not as powerful in discriminating among track levels as were the other two sets of variables. Classification statistics for the math analyses are included in Tables 33 and 34. Here, 72.41 percent at the high school level and 68.09 percent at the junior high level of the tracked classes were correctly reclassified by their scores on the discriminating variables, more than twice the expected percentages.

Table 31

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High English Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership High	 Average	 Low
High Track	18	11 61.1%	6 33.3%	1 5.6%
Average Track	28	10 35.7%	13 46.4%	5 17.9%
Low Track	12	3 25.0%	4 33.3%	5 41.7%
Heterogeneous	22	10 45.5%	9 40.9%	3 13.6%

Percentage of Tracked Classes Correctly Classified: 50.00%

Table 32

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High English Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	13	9 69.2%	2 15.4%	2 15.4%
Average Track	14	4 28.6%	8 57.1%	2 14.3%
Low Track	16	4 25.0%	3 18.8%	9 56.3%
Heterogeneous	21	7 33.3%	10 47.6%	4 19.0%

Percentage of Tracked Classes Correctly Classified: 60.47%

Table 33

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High Math Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	21	18 85.7%	1 4.8%	2 9.5%
Average Track	19	6 31.6%	10 52.6%	3 15.8%
Low Track	18	2 11.1%	2 11.1%	14 77.8%
Heterogeneous	9	4 44.4%	4 44.4%	1 11.1%

Percentage of Classes Correctly Classified: 72.41%

Table 34

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High Math Classes on Teacher-Student Relationship and Teacher Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	18	14 77.8%	2 11.1%	2 11.1%
Average Track	14	5 35.7%	9 64.3%	0 0.0%
Low Track	15	5 33.3%	1 6.7%	9 60.0%
Heterogeneous	17	8 47.1%	3 17.6%	6 35.3%

Percentage of Classes Correctly Classified: 68.09%

This set of variables appears to have discriminated as well among math tracks as the curricular content and instructional practice variables.

In both subjects and levels, prediction of correct track level was most accurate among high track classes--61.1 percent and 69.2 percent in English and 85.7 percent and 77.8 percent in math. The least accurate proportions of classifications were made among low track classes in English at both levels and in junior high math. In English at the senior high level, in fact, low track classes were predicted as being almost evenly distributed among track levels. This would indicate that, even though the group centroids were considerably lower for low track classes than for the average and high tracks, there was considerable variability among classes at this level. This variability was to the extent, in fact, that 25 percent of the low track classes in these three analyses were reclassified as belonging with the high track group. We can conclude from this result that, while the central tendency for low track classes was to be distinctly different from high and average groups on this teacher-student relationship and teacher affect dimension, this did not hold for a considerable proportion of the low track classes in the sample. On the other hand, similar to the curricular content and instructional practice analyses, the relative closeness of the groups of high and average classes is supported in these analyses in that, when misclassifications of average classes were made, these classes were twice as likely to be predicted to be high than low track classes.

The classification results were somewhat different in senior high math. Average track classes were reclassified with the least accuracy. A third of these classes were identified as belonging to the high track group. Apparently, even though the average group centroid was quite distant from that of the high--more distant, in fact, than that of the low track--the variability among classes was such that a considerable percentage had discriminant scores closer to the mean of the high track than either the low or the average group itself. The variability among low track classes observed in the other three analyses was not evidenced in senior high school math. Low track classes as a group appear to have been relatively distinct from the other two track levels.

Heterogeneous classes, in all four analyses tended to be more like high than low track classes on this set of variables as well. More senior high English and junior high math heterogeneous classes were classified as high track classes than as either of the other two tracks. Additionally, because of the separation of the group centroids in English, placement of these heterogeneous groups in the average track indicates a greater similarity to high than to low track classes. Only 13.6 percent of the senior high and 19.0 percent of the junior high heterogeneous English classes were classified into the low track. Thus, even though it is evident that some low track classes did not follow the general pattern, the overall tendency was for low track classes to be distinctly separate from all other types of classes in the area of teacher-student relationships and teacher affect. In math, however, the placement of a considerable number of heterogeneous senior high classes in the average track group indicates that, like in the average track there was considerable variability. In fact, nearly half of the heterogeneous classes appear to have been among the most positive in teacher-student relationships and nearly half among the most negative. The most important information about heterogeneous classes, however, is that across all four analyses, of the 69 heterogeneous groups, only 11 (16 percent) were classified into the groups with the least positive teacher-student relationships and 27 (39 percent) were placed in the groups with the most positive relationships.

In summary, in the area of teacher-student relationships and teacher affect, while important differences were found, this aspect of classroom experiences does not appear to have been as powerful in discriminating among track levels as either curricular content or instructional practice. At the two levels of schooling, differentiation among track levels on this set of variables took slightly different forms. However, in English at both levels, the trend was for high, average, and heterogeneous groups to cluster together and for low track classes to be distinctly different from the others. In math the situation was not quite so clear. At the high school level, high and low tracks appear to have been distinctly separate from one another and for the classes within them to exhibit little variability, with the high track more positive than the low. Considerable variation was exhibited among both the average and heterogeneous groups, with some classes quite positive and a considerable portion the most negative on this set of variables. At the junior high level, the results are difficult to interpret as tracks were differentiated only by observed teacher affect, an infrequently occurring variable. Across all four analyses it seems clear that high track classes were the most positive in teacher-student relationships and that heterogeneous classes were most often placed in the groups with the most positive scores on this dimension.

Differences in Student-Peer Relationships and Student Affect

To examine the differences in the relationships among students and student affect in classes at different track levels multiple discriminant analyses were perfprmed using ten discriminating variables. Included in these analyses were: students' scores on the learning environment scales measuring classroom dissonance, student compliance and cooperation with classroom activity, student apathy, peer esteem, student competitiveness, and classroom cliqueness; students' level of agreement with two single questionnaire items: "Students in this class are unfriendly to me" and "I feel left out of class activities;" and observers' reports of the percentages of student-initiated interactions with teachers characterized by positive and negative student affect.

Significant differences were found among track levels at both senior and junior high levels separately as well as over all classes in both math and English on the ten variables. The results of the tests of the equality of group centroids are shown in Tables 35 and 36. For each analyses the differences among track levels were significant at either the .001 or the .01 level.

In English at the senior high level, two discriminant functions which accounted for statistically significant portions of the variance among tracks were derived from this set of student-peer relationship and student affect variables. In English at the junior high level and in math at both levels, however, a non-significant amount of information remained after the removal of the first function. As a result, at the senior high level in English, both functions were considered in the interpretation of track level differences. In the other analyses, as in most of the previous discussions, the second function was ignored.

The discriminant function statistics--the size of the eigenvalues and relative percentages--presented in Table 37 indicate that slightly more of the variance among English tracks at the senior high school level was accounted for by the first than by the second discriminant function. Both functions, however, had moderate to high associations with track level as indicated by the canonical correlations of .64 for the first function and .58 for the second.

Table 35

Significance Test for Discriminant Analyses--Tracked English Classes on Student-Peer Relationship and Student Affect Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High	0	.39	44.36*	20
Classes	1	.66	19.40**	9
Junior High	0	.28	40.05*	20
Classes	1	.85	5.21	9
All Secondary	0	.42	73.01*	20
Classes	1	.83	16.09	9

* Significant at .01 level

**Significant at .05 level

Table 36

Significance Tests for Discriminant Analyses--Tracked Math Classes on Student-Peer Relationship and Student Affect Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High	0	.40	43.85^{*}	20
Classes	1	.82	9.44	9
Junior High	0	.27	44.58^{**}	20
Classes	1	.69	12.99	9
All Secondary	0	.47	67.51^{**}	20
Classes	1	.91	8.46	9

** Significant at the .001 level

* Significant at the .01 level

Table 37

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track English Classes on Student-Peer Relationship and Student Affect Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
	Function 1	Function 2
Classroom Dissonance	.80	-.05
Students are unfriendly	.70	-.05
I feel left out	.38	-.22
Student Cliqueness	.23	-.11
Positive Student Affect--Observed	-.21	-.07
Student Competitiveness	.03	.64
Peer Esteem	-.15	.53
Student Apathy	.46	.50
Student Negative Affect--Observed	-.02	.36
Student Compliance	.24	.25
Discriminant Function Statistics		
Eigenvalue	0.69	0.50
Relative Percentage	57.81%	42.19%
Canonical Correlation	.64	.58
Group Centroids (Means)		
High Track	-0.51	0.94
Average Track	-0.29	-0.64
Low Track	1.59	0.25

* See Chapter IV for details on the measurement of these variables.

The substance of these senior high track level differences can be explained by looking at those single variables with the highest rotated correlations with the functions. The first function exhibited student reports of classroom dissonance and student perceptions of other students as being unfriendly as the most important contributors to the differences among track levels. The second discriminant function resulted in those aspects of students' classroom relationships focused on competitiveness and peer esteem as contributing the most to track separation. Both functions were characterized to a lesser extent by student apathy and observed student affect. In the case of the first function, the affective dimension took the form of a low negative association between observed positive student affect and the function itself. On the second discriminant function, a moderate positive correlation between negative student affect and the function gives evidence of the separation of track levels on this variable.

As shown in Figure 2, high track and average track classes both tended to be somewhat high on the first function and the low classes especially low. Thus, it appears that the low track classes were distinguished from the others by a higher degree of classroom disruption and hostility and by students' beliefs that other students were unfriendly and that they were often left out of social relationships and class activities.

Function 2, on the other hand, tends to separate all three track levels, but in a way different from that in previous analyses. In the area of student competitiveness and peer esteem, both high and low track classes had positive centroids. In contrast, the negative centroid of the average classes removed this group from its usual

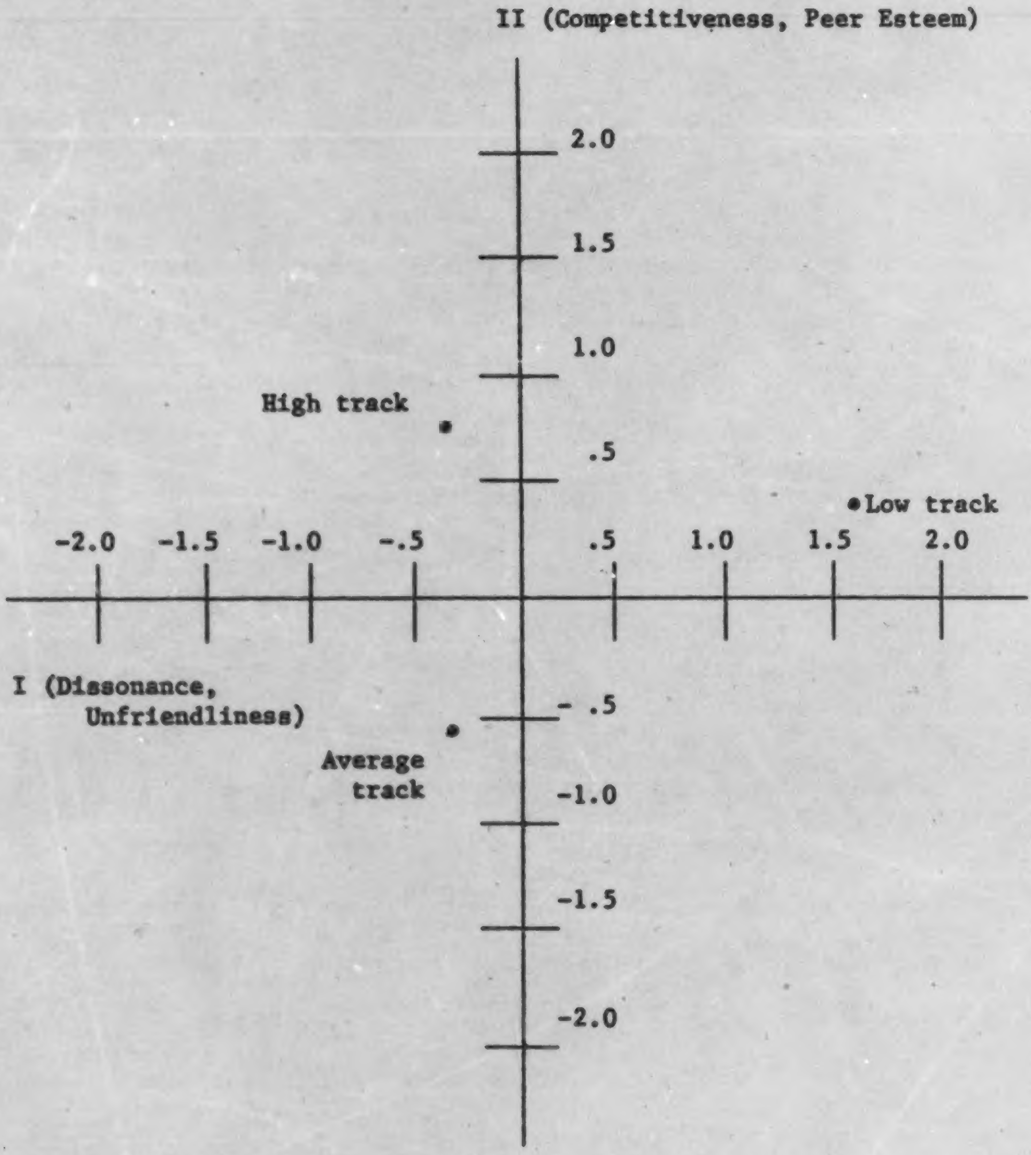

Figure 2 Group Centroids on Discriminant Functions 1 and 2 for Track Levels of Senior High English Classes on Student-Peer Relationship and Student Affect Variables

middle position among the tracks and placed it as the lowest of the three on this dimension. We can infer from these centroids and the correlations, then, that high track classes were characterized by higher levels of student competitiveness and peer esteem than the other two. Average classes, on the other hand, were less likely to have competitiveness and peer esteem than the other two. On this dimension, then, high and low classes were more similar to each other than average classes were like the other two groups. The centroid scores on both functions indicate, also, that average classes were characterized by lower levels of student apathy than classes in either the high or low tracks. The average track was the only group with a negative mean on both functions which were characterized by a positive correlation with student apathy.

While it is difficult to describe the senior high track levels precisely in terms of the two discriminant functions together, the following conclusions can be made. High track classes were relatively high in competitiveness and peer esteem and relatively low in dissonance and student unfriendliness. Average track classes were relatively low in both these areas. Low track classes were in middle range in competitiveness and peer esteem but quite high in classroom dissonance and unfriendliness (Figure 2).

The analysis of these student-peer relationship and student affect variables in junior high school English and math at both levels had only slightly different results. The discriminant function statistics presented in Tables 38 through 40 indicate that most of the variance among track levels in these three analyses was accounted for by the first discriminant functions. The canonical correlations of .82, .71,

Table 38

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track English Classes on Student-Peer Relationship and Student Affect Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables Function 1	Function 2
I feel left out	.63	.26
Students are unfriendly	.56	.19
Student Compliance	-.53	-.05
Student Apathy	.44	.24
Student Competitiveness	.23	.06
Negative Student Affect - Observed	.15	.05
Classroom Dissonance	.25	.60
Peer Esteem	-.14	-.45
Positive Student Affect - Observed	-.15	-.43
Student Cliqueness	.02	.19
Discriminant Function Statistics		
Eigenvalue	2.02	0.18
Relative Percentage	91.83%	8.17%
Canonical Correlation	.82	.39
High Track	-1.33	-0.69
Average Track	-0.76	0.44
Low Track	1.67	0.20

* See Chapter IV for details on the measurement of these variables.

Table 39

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track Math Classes on Student-Peer Relationship and Student Affect Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Class Dissonance	.66	-.14
Feel left out	.52	-.28
Student Competitiveness	-.42	.20
Negative Student Affect	.25	.01
Students are unfriendly	.21	-.21
Student Compliance	.09	.66
Student Apathy	.56	-.64
Peer Esteem	-.22	.49
Student Cliqueness	.13	-.41
Positive Student Affect	-.20	.32
Discriminant Function Statistics		
Eigenvalue	1.03	0.21
Relative Percentage	82.78%	17.22%
Canonical Correlation	.71	.42
Group Centroids		
High Track	-1.05	0.72
Average Track	0.27	-0.86
Low Track	1.00	0.02

Table 40

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track Math Classes on Student-Peer Relationship and Student Affect Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Student Apathy	.71	-.27
Feel left out	.60	.07
Students are unfriendly	.39	.11
Peer Esteem	-.33	.11
Class Dissonance	.30	.02
Student Cliqueness	.06	-.03
Student Competitiveness	.14	.85
Student Compliance	-.29	.29
Student Positive Affect - Observed	-.07	.27
Student Negative Affect - Observed	0.0	-.21
Discriminant Function Statistics		
Eigenvalue	1.50	0.46
Relative Percentage	76.62%	23.38%
Canonical Correlation	.77	.56
High Track	-1.36	0.39
Average Track	0.89	-1.10
Low Track	0.96	0.65

and .77 indicate a strong association between track levels and scores on these functions. Thus, we can conclude that the significant differences among track levels on these student-peer relationship variables can be efficiently explained by the first functions derived in the discriminant analysis of these three groups of classes.

From the rotated correlations between the single variables and the functions themselves, the first discriminant functions seem to be characterized strongly by student responses to items concerning their feeling left out of class activities and the unfriendliness of other students. Differences in levels of student compliance, student apathy, and class dissonance also contributed markedly to track separation, with variance in student competitiveness and peer esteem having some impact as well. Negative student affect and student cliqueness do not appear to have contributed much to the differentiation among track levels in any of these analyses.

The group centroids show that there was considerable separation among tracks with the low track having the highest score--in junior high English, the only group with a positive mean on this function--with the average and high track means lower. While, once again, in English the average track mean was closer to that of the high track than to that of the low classes, there was considerable separation between these two tracks as well.

Once again in math, however, we see a pattern of group separation different from that in English. While the average track's centroid is the middle score on this function in math at both levels, this group's score was slightly closer to that of the low track at the senior high level and considerably closer at the junior high school level. So, while the low track appears to be isolated from other groups in the English analyses, it is the high track that seems to be distinctly different in math.

From the centroids and the correlations, then, it is clear that the overall differences among tracks on this set of variables can be described as the following. Students in low tracks expressed significantly more negative views about their relationships with other students and reported the highest levels of apathy of any of the groups. The average and high tracks were less negative in their reports of their relationships with other students and perceived less student apathy, with the high track classes characterized the least by these negative attributes.

It is evident from the analysis phase of the discriminant analyses at both schooling levels, then, that the relationships among students and student affect varied noticibly in classes at different track levels. The result in this set of variables, as with most of those considered thus far, was that in English high and average track classes were somewhat similar and that low track classes were considerably different from these two groups. This trend was especially evident in the analysis of these variables at the junior high school level. In math, while senior high average classes were fairly equidistant from the high and low track, at the junior high level the average group was quite close to the low.

The classification phase of the analyses resulted in the correct classification of 70.49 percent of the tracked English classes at the senior high level, 75.00 percent of the tracked junior high school English classes, 71.67 percent of the tracked math classes at the senior high school level, and 74.51 percent of the tracked junior high school math classes. This result indicates that this set of variables was fairly powerful in discriminating among track levels; more than twice the number of classes expected by chance alone were accurately reclassified by their scores on the discriminating variables (Tables 41 through 44).

At the senior high school level in English and at both levels in math, predictions were made with approximately the same level of accuracy for the three tracks, reflecting a rather distinct separation of the three groups. At the junior high level in English classifications were most accurate for low track classes with 88.2 percent predicted correctly, giving evidence of the more distinct separation of this group from the others on these variables. The similarity of the high and average classes was reflected in the direction of the misclassifications of classes in these tracks. Moreover, the directions of the misclassifications in all the analyses give additional support to the view that there was little similarity between high and low track classes; in senior high English, in fact, only one low class was misclassified as high and no high class was placed in the low track classification. Additionally, average classes in this analysis were slightly more likely to be misclassified as high than as low track. High track junior high classes were most often misclassified as average and average classes were only misclassified as belonging to the high track. In math, when average classes at the senior high level were misclassified, half the misclassifications were into the high track, half into the low. At the junior high level most misclassified average classes were placed into the low track. The misclassifications in all four analyses reflect both the degree of separation among the group centroids and the amount of variability within tracks. Nevertheless, we can infer from these statistics that in English, at both levels, average classes tended to be

Table 41

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High English Classes on Student-Peer Relationship and Student Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	18	13 72.2%	5 27.8%	0 0.0%
Average Track	31	6 19.4%	21 67.7%	4 12.9%
Low Track	12	1 8.3%	2 16.7%	9 75.0%
Heterogeneous	22	8 36.4%	7 31.8%	7 31.8%

Percentage of Tracked Classes Correctly Classified: 70.49%

Table 42

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High English Classes on Student-Peer Relationship and Student Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	16	9 56.3%	6 37.5%	1 6.3%
Average Track	15	3 20.0%	12 80.0%	0 0.0%
Low Track	17	0 0.0%	2 11.8%	15 88.2%
Heterogeneous	24	8 33.3%	10 41.7%	6 25%

Percentage of Tracked Classes Correctly Classified: 75.00%

Table 43

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High Math Classes on Student-Peer Relationship and Student Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	21	16 76.2%	2 9.5%	3 14.3%
Average Track	20	3 15.0%	14 70.0%	3 15.0%
Low Track	19	1 5.3%	5 26.3%	13 68.4%
Heterogeneous	11	4 36.4%	3 27.3%	4 36.4%

Percentage of Classes Correctly Classified: 71.67%

Table 44

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High Math Classes on Student-Peer Relationship and Student Affect Dependent Variables

Actual Group	N of Classes	Predicted Track Membership		
		High	Average	Low
High Track	19	15 78.9%	2 10.5%	2 10.5%
Average Track	16	1 6.3%	11 68.8%	4 25.0%
Low Track	16	0 0.0%	4 25.0%	12 75.0%
Heterogeneous	17	6 35.3%	6 35.3%	5 29.4%

Percentage of Classes Correctly Classified: 74.51%

closer to high than to low track, in senior high math, the groups were fairly evenly separated, and in junior high math average classes tended to be closer to low track than to high on this student-peer relationship and student affect dimension.

Interesting information about the heterogeneous classes, at both levels, was gained from the classification phases of these analyses as well. At both schooling levels, fairly similar numbers of heterogeneous classes were placed at each track level, although more so at the senior high than at the junior high school level. It appears from this classification pattern that heterogeneous classes as a group did not tend to resemble any one particular track level in the kinds of student-peer relationships and student affect measured by the set of variables, but rather were quite varied on this dimension. It is fairly evident, however, from the relative closeness of the high and average groups in English at the junior high school level, the separation of these two groups from the low tracks, and the somewhat smaller percentage of heterogeneous classes, at this level, being classified into the low track that junior high school heterogeneous English classes did not tend to resemble low track classes on this dimension, but were more like high or average classes. Finally, it is enlightening to note that greater percentages of heterogeneous classes than either average or low track classes were classified in all the analyses as high track, indicating that more heterogeneous classes were like high track classes on this dimension than were like any other group.

From these analyses, then, it is evident that distinct and statistically significant differences existed among track levels at both the junior and senior high school levels in the types of student-peer relationships and student affect that comprise a part of daily classroom experiences. The set of variables chosen proved to be fairly powerful in discriminating among track levels. While the discrimination took slightly different forms in the two subjects at the two schooling levels, the most prominant result is that, at both levels, low track classes were characterized by higher levels of classroom dissonance and more negative feelings among students about their relationships with their peers than were high track classes. Heterogeneous classes were not characteristically like any one of the tracked groups in these measures of student relationships and student affect. Rather, heterogeneous classes appear to have varied widely in this respect. At the junior high school level in English, however, few heterogeneous classes were similar to those in the low track. And, in all of the analyses a third or more of these classes were most like the high track group.

Differences in the Type of Student Involvement in Learning Interactions

In an attempt to determine whether students' involvement in classroom learning activities at different track levels may have contributed differentially to increasing alienation from or affiliation with the classroom experience, thirteen discriminating variables were included in multiple discriminant analyses of track levels and types of student involvement. Included in the analyses were the following variables: teacher, student, and observer reports of the occurrence of both passive and active learning activities; the observed frequency with which students directed classroom activities; the observed frequency of the arrangement of students in cooperatively-led, small, medium, or large groups for learning activities; the extent of student decision-making in the classroom from both student and observer reports; the observed extent to which teachers asked open-ended questions of their students; observer reports of the average percentage of students who were actively participating in the prescribed classroom activity; and the percentage of students who, although assigned to a learning activity, were engaged in "off-task" behavior.

Statistically significant track level differences on this set of variables were not found at any level of the analysis, in neither subject at each schooling level separately nor over all classes taken together. Tables 45 and 46 include the statistics resulting from the tests of the equality of group centroids.

Despite these non-significant results over the set of variables, if the functions derived and the group centroids on them had resulted in trends which indicated that groups tended to be characterized by passive or active activities or that the students in them tended to be more or less actively involved in learning interactions, it would be valuable to explore the analysis phase of these discriminant analyses. But, as the rotated correlations between the canonical discriminant functions and the discriminating variables and the group centroids presented in Tables 47 through 50 show, easily interpretable trends did not result from the data at either schooling level. For example, at both levels in English the first discriminant function was quite strongly characterized by teacher reports of both passive and active activities in the same direction--positive at the senior high level and negative among junior high classes. This would seem to indicate that, at both levels, tracks did not differ in the passive or active nature of activities but in the differences in frequency of both types. At both levels, however, observed occurrences of passive activities are

Table 45

Significance Test for Discriminant Analyses--Tracked English Classes on Student Involvement Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.54	27.93	26
	1	.82	9.00	12
Junior High Classes	0	.36	30.84	26
	1	.76	8.07	12
All Secondary Classes	0	.68	31.87	26
	1	.87	12.21	12

Table 46

Significance Tests for Discriminant Analyses--Tracked Math Classes on Student Involvement Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.49	33.54	26
	1	.87	6.55	12
Junior High Classes	0	.33	36.17	26
	1	.61	16.18	12
All Secondary Classes	0	.66	37.06	26
	1	.91	8.60	12

in the opposite, and therefore contradictory, direction. The direction of differences of other variables further indicates that no clear pattern of active or passive involvement existed among tracks. At the senior high level, in tracks where student decision making was lower--an indication of passive involvement--observed active student participation was higher. These conflicting trends give no evidence of some tracks being more or less characterized by passive or active student involvement than others. Only in math at the senior high school level did interpretable trends emerge from the analysis. And while it must be kept in mind they are not statistically significant, it is interesting to note their direction. The first discriminant function which accounted for most of the variance can be described as low in student off-task behavior, high in student interest level, high in active activities, and high on one measure of student decision-making. The group centroids on this function show that high track classes tended to be highest on this dimension with average low track classes considerably lower and fairly close together. Taken together, these data indicate that the trend among senior high math classes was for them to be characterized by more active student involvement than were classes at the other track levels.

Nevertheless, it must be concluded that for this sample of classes no conclusive differences in the kind of student involvement in learning activities were evidenced in classes at different track levels. Therefore, while students at different track levels may have experienced classroom social relationships and interactions with teachers and peers that may have led them differentially toward alienation from or affiliation with their schooling experiences, the kinds of involvement in actual class learning activities measured by this set of variables does not appear to have contributed to this end.

Table 47

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track English Classes on Student Involvement Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
	Function 1	Function 2
Passive Activities (Teacher)	.62	-.09
Student Decision-Making (Observed)	-.49	.27
Active Activities (Teacher)	.48	.10
Passive Activities (Observed)	-.33	.30
Active Activities (Student)	.25	-.09
Active Student Participation	.25	.11
Student Decision-Making (Student)	-.20	-.03
Off-Task Behavior	-.18	-.44
Passive Activities (Student)	.03	-.36
Active Activities (Observed)	-.01	.34
Open-Ended Questions	-.04	.31
Student Direction of Activity	.07	-.25
Cooperative Learning Groups	.01	.10
Discriminant Analysis Statistics		
Eigenvalue	0.51	0.22
Relative Percentage	70.20%	29.80%
Canonical Correlation	.58	.42
Group Centroids (Means)		
High Track	0.03	0.80
Average Track	0.45	-0.18
Low Track	-1.19	-0.70

* See Chapter IV for details on the measurement of these variables.

Table 48

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track English Classes on Student Involvement Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables[*]	Function 1	Function 2
Student Decision-Making (Observed)	.46	-.09
Passive Activities (Student)	-.46	.23
Active Activities (Teacher)	-.37	.02
Passive Activities (Teacher)	-.35	-.26
Student Decision-Making (Student)	.35	.08
Passive Activities (Observed)	.26	-.00
Off-Task Behavior	.16	.08
Student Direction of Activity	.06	.55
Cooperative Learning Groups	.33	.36
Active Activities (Observed)	-.13	.29
Open-Ended Questions	-.00	.19
Active Student Participation	.11	.17
Active Activities (Student)	-.01	.13
Discriminant Analysis Statistics		
Eigenvalue	1.14	0.30
Relative Percentage	78.61%	21.39%
Canonical Correlation	.73	.49
Group Centroids (Means)		
High Track	-0.61	1.19
Average Track	-0.71	-0.42
Low Track	1.05	-0.61

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[*] See Chapter IV for details on the measurement of these variables.

Table 49

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track Math Classes on Student Involvement Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Student Off-Task Behavior	-.54	-.23
Active Activities (Student)	.48	.09
Student Participation	.42	-.09
Student Decision-Making	.36	-.28
Cooperative Learning Groups	-.19	.16
Student Direction of Activity	.08	-.01
Passive Activities (Student)	-.04	.44
Student Decision-Making (Observed)	.07	-.36
Passive Activities (Teacher)	-.02	.29
Active Activities (Teacher)	.20	.28
Active Activities (Observed)	.24	-.26
Passive Activities (Observed)	.01	.22
Open-Ended Questions	-.06	.06
Discriminant Function Statistics		
Eigenvalue	.78	.15
Relative Percentage	83.85%	16.15%
Canonical Correlation	.66	.36
Group Centroids		
High Track	0.88	0.66
Average Track	-0.72	0.05
Low Track	-0.33	-0.85

Table 50

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track Math Classes on Student Involvement Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Student Participation	.44	.02
Passive Activities (Observed)	.38	.36
Student Off-Task Behavior	-.23	.06
Cooperative Learning Groups	-.13	-.06
Active Activities (Student)	.12	.64
Student Decision-Making	-.23	.48
Active Activities (Teacher)	-.04	.40
Passive Activities (Student)	.05	.39
Passive Activities (Teacher)	-.24	.27
Student Direction of Activities	-.11	-.27
Student Decision-Making (Observed)	.00	.25
Open-Ended Questions	.01	.25
Active Activities (Observed)	-.03	-.18
Discriminant Function Statistics		
Eigenvalue	.83	.63
Relative Percentage	56.83%	43.17%
Canonical Correlation	.67	.62
Group Centroids		
High Track	1.06	0.13
Average Track	-0.59	-1.03
Low Track	-0.86	0.93

Tracking and Student Attitudes

The fourth objective of the study was to explore student attitudes toward themselves, their futures, and their schooling experiences. Track levels in schools were analyzed to determine whether differences in student attitudes existed among tracks which are consistent with the concept of the "legitimation of inequality" discussed by cultural reproduction theorists. Three research questions to be answered with the data were developed from this objective: 1) Do self-concepts of students vary with track levels? 2) Do student aspirations vary with track level? 3) Do student attitudes toward their schools, subjects, and classes vary with track level?

A multiple discriminant analysis was performed on track level and student attitudes using ten discriminating variables in the analysis. Included were: three scales, each measuring a different aspect of students' self-concepts--general, academic, and in relation to their peers; the mean class response to an item asking what they will probably do in regard to education in the future and mean class percentage of those who responded, "don't know" to this item; items in which students' graded their schools, reported how much they liked the subject of their class and how important they perceived it to be; a scale measuring their general satisfaction with the class they were in; and an item in which students reported what they were learning as interesting or boring to them.

Significant differences were found among track levels on the ten variables in both subjects, overall secondary classes and at each level separately. The results of the tests of the equality of group centroids--

Wilks' lambda statistics converted to chi-square significance tests--are shown in Tables 51 and 52. Figures in Tables 51 and 52 also indicate that the amount of information regarding track level differences remaining after the removal of the first discriminant functions was not statistically significant. Therefore, we can safely ignore the second function in the interpretation of track level differences in the aspects of student attitudes included here.

The discriminant function statistics presented in Tables 53 through 56 report the ability of the derived functions to discriminate among track levels on these set of variables. As with the majority of analyses of tracking and classroom processes, in the analyses of tracking and student attitudes the first discriminant functions derived accounted for more than three-quarters of the variance among track levels in each group of classes. The canonical correlations show the strong associations between the first discriminant function and tracking in all of the analyses, although the relationship is somewhat stronger among math than English classes. Thus, we can conclude from these statistics that there were significant differences among track levels in student attutudes and that the first functions derived from the discriminant analyses can be used to explain these differences at both levels in both English and math.

The rotated correlations between the first canonical discriminant function and the discriminating variables indicate that similar patterns of differences were found in all four analyses. In each analysis the level of educational aspirations and academic and general self-concepts were those variables which appeared to contribute most to track level separation. Additionally, in all four analyses the

Table 51

Significance Tests for Discriminant Analyses--Tracked English Classes on Student Attitude Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.40	49.42**	20
	1	.81	11.42	9
Junior High Classes	0	.46	31.63*	20
	1	.82	8.28	
All Secondary Classes	0	.54	62.82***	20
	1	.86	15.53	9

*** Significant at the .001 level

** Significant at the .01 level

* Significant at the .05 level

Table 52

Significance Tests for Discriminant Analyses--Tracked Math Classes on Student Attitude Dependent Variables

	Functions Derived	Wilks' Lambda	Chi-square	df
Senior High Classes	0	.31	62.49**	20
	1	.83	10.12	9
Junior High Classes	0	.30	53.57**	20
	1	.79	10.74	9
All Secondary Classes	0	.38	101.73**	20
	1	.84	17.81*	9

** Significant at the .001 level

* Significant at the .05 level

following variables seemed of little importance in explaining track differences: students' satisfaction with the class they were in and students' perceptions of what they were learning as interesting or boring. Some subject and level differences that emerged were that: 1) only in senior high English and in junior high math did students' perceptions of the subject as important contribute moderately to track separation; 2) the percentage of students uncertain about their educational futures, students' self-concepts in relation to peers and liking of the subject seemed somewhat important only among senior high math tracks, and 3) students' grading of their schools added to track differentiation only among junior high English tracks. Generally, then, those variables measuring level of educational aspirations, general self-concepts, and academic self-concepts consistently contributed to track separation. Those variables measuring student satisfaction with their schools, the subjects studied, and actual classes did not appear to be important in differentiating among tracks across subjects and levels.

The group centroids in all four analyses show considerable separation among track levels. In each sample of classes, the high track group had the highest mean score on the first discriminant function, the average track group the middle score, and the low track group the lowest mean score on this function. The centroids of the average tracks in both subjects at the junior high school level tended to be closer to the low track score than to the high. Substantively, we can infer from these scores on the discriminant functions that high track classes in all four analyses were characterized by students with higher educational aspirations and more positive academic and general

Table 53

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track English Classes on Student Attitude Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Aspirations	.66	.18
Academic self-concept	.63	.11
General self-concept	.34	.03
Subject is important	.28	.09
Peer self-concept	.20	.58
Satisfaction scale	.12	.52
Grading of school	.12	.39
Interesting/boring	.08	.26
Like subject	.09	.22
Aspiration--% "don't know"	.06	-.20
Discriminant Function Statistics		
Eigenvalue	1.03	.24
Relative Percentage	81%	19%
Canonical Correlation	.71	.49
Group Centroids		
High Track	1.06	0.38
Average Track	0.07	-0.48
Low Track	-1.78	0.67

Table 54

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track English Classes on Student Attitude Dependent Variables

Dependent Variables*	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
	Function 1	Function 2
Academic self-concept	.71	.00
Aspirations	.52	.04
Peer self-concept	.22	-.17
Interesting/boring	.16	.06
Like subject	-.03	.00
General self-concept	.37	.57
Grading of the school	.38	-.43
Aspirations—% "don't know"	-.03	-.32
Satisfaction scale	.05	.24
Subject is important	-.12	.14
Discriminant Function Statistics		
Eigenvalue	0.78	0.23
Relative Percentage	77%	23%
Canonical Correlation	.66	.43
Group Centroids		
High Track	1.08	0.16
Average Track	-0.26	0.63
Low Track	-0.79	-0.71

Table 55

Results of Discriminant Analysis of Senior High "High," "Average," and "Low" Track Math Classes on Student Attitude Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Aspirations	.78	.10
Aspirations--% "don't know"	-.35	-.14
Peer self-concept	.29	.03
Like subject	.30	.72
Satisfaction scale	-1.0	.63
Interesting/boring	.06	.51
Academic self-concept	.43	.50
General self-concept	.43	.47
Subject is important	.17	.30
Grading of the school	.12	.24
Discriminant Function Statistics		
Eigenvalue	1.66	0.20
Relative Percentage	89%	11%
Canonical Correlation	.79	.42
Group Centroids		
High Track	1.41	0.75
Average Track	-0.15	-0.73
Low Track	-1.47	-0.11

Table 56

Results of Discriminant Analysis of Junior High "High," "Average," and "Low" Track Math Classes on Student Attitude Dependent Variables

	Rotated Correlations Between Canonical Discriminant Functions and Discriminating Variables	
Dependent Variables*	Function 1	Function 2
Aspirations	.72	-.23
Academic self-concept	.62	.36
General self-concept	.32	.23
Subject is important	.26	.20
Grading of the school	.21	.13
Peer self-concept	.16	.07
Like subject	.18	.67
Interesting/boring	.10	.60
Satisfaction scale	.13	.52
Aspiration--% "don't know"	-.05	-.07
Discriminant Function Statistics		
Eigenvalue	1.62	.28
Relative Percentage	86%	14%
Canonical Correlation	.79	.46
Group Centroids		
High Track	1.58	0.39
Average Track	-0.79	-0.83
Low Track	-1.04	0.42

self-concepts than the other groups and that average track classes tended to be higher on these dimensions than low. Senior high math tracks also appear to have differed in the following ways: high track classes were more characterized by students with high self-concepts in relation to peers, students who said they liked math, and by fewer students who were uncertain about their educational futures than were the other tracks. Except for this greater student liking of math among senior high high track classes and a tendency for high track junior high English classes to have students who "grade" their schools higher, student satisfaction with their schooling experiences did not seem to vary systematically with track level in any of the analyses.

Again, with this group of student attitude variables, the power of the discriminant functions to distinguish among classes at different track levels can be checked with the classification phase of the discriminant analysis. Included in Tables 57 through 60 are the number and percentages of classes in each subject at each level that were reclassified as high, average, and low based on their scores on the discriminating variables. On this student attitude dimension 70.49 percent of the senior high and 66.67 percent of the junior high English classes were reclassified correctly, as were 80.33 percent of the senior high and 78.85 percent of the junior high math classes. Once again, the percentage of correct reclassifications are more than twice what would be expected by chance. As a result, we can conclude that the student attitudes included as variables in this analysis work together in a quite powerful way to discriminate among track levels. There was considerable variation, however, among the four samples as to the accuracy of prediction for each of the track levels; this, of course,

Table 57

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High English Classes on Student Attitude Dependent Variables

		Predicted Track Membership		
Actual Group	N of Classes	High	Average	Low
High Track	18	12 66.7%	6 33.3%	0 0.0%
Average Track	31	8 25.8%	20 64.5%	3 9.7%
Low Track	12	0 0.0%	1 8.3%	11 91.7%
Heterogeneous	22	12 54.5%	6 27.3%	4 18.2%

Percentage of Classes Correctly Classified: 70.49%

Table 58

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High English Classes on Student Attitude Dependent Variables

Actual Group	N of Classes	Predicted Track Membership High	 Average	 Low
High Track	16	13 81.3%	1 6.3%	2 12.5%
Average Track	15	5 33.3%	8 53.3%	2 13.3%
Low Track	17	2 11.8%	4 12.5%	11 64.7%
Heterogeneous	24	8 33.3%	7 29.2%	9 37.5%

Percentage of Classes Correctly Classified: 66.67

Table 59

Classification by Discriminant Analysis of Tracked and Heterogeneous Senior High Math Classes on Student Attitude Dependent Variables

Actual Group	N of Classes	Predicted Track Membership High	 Average	 Low
High Track	22	20 90.9%	2 9.1%	0 0.0%
Average Track	20	3 15.0%	13 65.0%	4 20.0%
Low Track	19	0 0.0%	3 15.8%	16 84.2%
Heterogeneous	11	0 0.0%	6 54.5%	5 45.5%

Percentage of Classes Correctly Classified: 80.33%

Table 60

Classification by Discriminant Analysis of Tracked and Heterogeneous Junior High Math Classes on Student Attitude Dependent Variables

Actual Group	Classes	Predicted Track Membership High	 Average	 Low
High Track	19	15 78.9%	3 15.8%	1 5.3%
Average Track	17	0 0.0%	14 82.4%	3 17.6%
Low Track	16	1 6.3%	3 18.8%	12 75.0%
Heterogeneous	17	5 29.4%	3 17.6%	9 52.9%

Percentage of Classes Correctly Classified: 78.85%

is a reflection both of the amount of separation between group centroids and the variability within track levels. Generally, however, across all four analyses, the separation of high and low groups was reinforced by the classification phase. Of the 78 high track classes, only 3 (4 percent) were identified as low track and of the 64 low track classes only 3 (5 percent) were misclassified into the high group. Predictions of average class placement varied in accuracy. Misclassifications, however, exhibited some consistency within subjects. Average track English classes were most often misclassified as high track. Average track math classes were misclassified somewhat more often as low than high; this was especially true at the junior high school level.

Considerable variability existed among the heterogeneous classes on this student attitude dimension as exhibited by the distribution of these classes into track levels during the classification phase of the analyses. Among the English groups, most of the heterogeneous senior high classes were placed in the high track, while the junior high classes were fairly evenly distributed. Among the math groups, senior high classes were fairly evenly divided between the average and low track classifications. Similarly, nearly half of the heterogeneous junior high math classes were placed in the low group; the remaining half were divided between the high and average tracks. As a result, it is not possible to conclude any consistent tendencies existed among heterogeneous groups on this student attitude dimension.

Taken together, then the information from the discriminant analyses of track levels and student attitudes provides the following answers to the research questions associated with the fourth objective of the study. First, academic and general self-concepts of students did vary among track levels. The direction of this difference was that classes in the high track group tended to have students with the most positive self-concepts and classes in the low track to have students with the most negative. Self-concepts in relation to peers did not show consistent differences among track levels. Second, the level of students' educational aspirations varied consistently with track level, again, with high track classes having students with the highest aspirations and low track classes having students with the lowest. However, the percentage of students who were uncertain about their educational futures did not vary with track level, except among senior high school math classes. And third, on the whole, students attitudes toward their schools, the subjects they were studying, and their classes did not seem to vary systematically with track level. Additionally, the classification phase of the discriminant analyses revealed that, across the four samples, heterogeneous classes exhibited considerable variability and could not be viewed as "most like" any one of the track levels.

Footnotes

1. Additional information generated using the Discriminant Analysis Subprogram of SPSS--including the number and percentage of classes at each track level, the means and standard deviations of each variable for each group, and the univariate _F_-ratios as well as the bivariate correlation matrices for each set of variables--are presented in Appendix B.

CHAPTER VI

TRACKING AND EDUCATIONAL EQUITY: SUMMARY AND IMPLICATIONS

Overview of the Study

The Research Problem

Tracking has been an almost universal practice in American secondary schools for the last eighty years. The view that tracking eases the instructional difficulties teachers face in working with diverse student groups and the belief that students learn better in classes where they are grouped with others of similar aptitudes and achievement levels have had wide acceptance. The extensive body of research on tracking and student achievement, however, has not borne out this latter belief. Much of the work in this area has been inconclusive. Indeed, the cumulative evidence has not supported the claim that homogeneous grouping enhances student learning. Moreover, considerable work on non-cognitive student outcomes associated with tracking has found that placement in low track classes has had substantial negative effects on students, including lowered self-concepts and aspirations and increased delinquency and misbehavior both in and out of schools. These research findings take on a special significance in view of the fact that poor and minority students have been consistently found in disproportionately large percentages in the lowest tracks in secondary schools. Tracking, therefore, has been implicated in the denial of equal educational opportunity to some groups of students in schools.

Despite these findings on tracking and both cognitive and affective student outcomes and the questions that have been raised linking tracking and educational inequity, little is known about the everyday experiences of students in classes at different track levels. It seems likely, however, that differences in these experiences may contribute to differences in student outcomes and may themselves be sources of educational inequity.

Procedures

This study used data collected for a national research project, A Study of Schooling, to investigate the classroom experiences of students in 297 secondary English and mathematics classes. The investigation focused on how track levels differed in three major aspects of day-to-day classroom experiences--curricular content, instructional practice, and social relationships and interactions--and in selected student attitudes. Tracked classes were compared with heterogeneously grouped classes on these dimensions as well. Theoretical propositions taken from a body of work that views schools as agents of cultural, social, and economic reproduction were used both to guide the formulation of research questions and in the interpretation of findings. Discriminant analysis was the primary analytic tool used to determine whether differences existed among track levels in the sets of variables studied and to explain the direction of those differences that were found.

Limitations

There is no reason to suspect that the classes studied here were unrepresentative of those in American schools in general. The schools in the sample were selected from several major regions of the United

States and differ in size, economic status, ethnicity, and location in terms of urban, rural, or suburban. Nevertheless, no attempt was made to secure a statistically random sample of schools. In addition, classes from only two subject areas were considered in this study. For these reasons, no definitive conclusions generalizable to a larger population of tracked classes can be drawn from the set of findings emerging from this study. Rather, insight can be provided from this work about processes occurring within different track levels at those schools studied. And, of course, questions can be raised about the implications of these findings for schooling on a wider scale.

Summary of Findings

Student race and tracking. Consistent with the findings of virtually every study that has considered the distribution of poor and minority students among track levels in schools, minority students were found in disproportionately large percentages in the low track classes studied in the multiracial schools in the Study of Schooling sample. Moreover, significantly higher proportions of white students than in the school populations as a whole were found in classes identified as high track. This pattern was most pronounced in schools where minority students were also poor. This uneven distribution of racial groups among tracks is especially important as it adds an element which should be kept in mind during the interpretation of the other findings in the study. For, in identifying processes found to be characteristic of low track classes, it should be remembered that these classes, too, were those disproportionately populated with minority--especially poor minority--students. And, as attributes of high track classes are described, that these classes contained disproportionate percentages of white students should not be forgotten. Thus, if it seems likely that inequities occurred in the classroom experiences of students at different track levels, we can be fairly certain that, at least in the multiracial schools, these inequities had racial overtones as well.

Curricular content and tracking. The first research objective of the study was to determine how both the quantity and quality of school knowledge was distributed to different groups within the schools studied. This objective was explored with the data by seeking the following information: Does the curriculum of classes at various track levels vary in the relative amount of time spent on instruction? And, does the curriculum of classes at different track levels vary in the type of instructional content made available to students? The data from both the English and math classes studied showed that in several respects both the quanitity and quality of knowledge was differentially distributed among track levels at both the junior and senior high schools. English classes at different track levels varied not only in the amount of class time spent on instruction, but in teachers' expectations of the amount of time students would spend learning at home. Clear track level differences in the amount of class time spent on instruction were found as well among the group of senior high math classes. The type of instructional content in English and math also differed among track levels. In English not only did the topics of instruction differ, but also the cognitive levels required of students by the skills and activities listed by teachers as part of the course content and the non-subject-related behaviors teachers said they wanted their students to learn. In math, track level differences in the type of instructional content were evidenced among senior high math classes in the instructional topics presented to students. Among junior high math classes both the topics of instruction and the cognitive complexity of tasks varied with track level.

The first research objective also included the determination of whether any differential distribution found could be considered as contributing to educational inequity among track levels. This possible inequity was seen as resulting from a distribution of knowledge such that high status knowledge--that which leads to higher education and the greater opportunities for social and economic power which results from high educational attainment--was limited to particular groups within schools.

While the determination of the existence of this type of inequity can not be accomplished by the statistical manipulation of data, we can infer, by examining the pattern of differences among track levels, that the findings certainly point in this direction. High track classes were presented with instructional topics that are traditionally associated with preparation for higher education. Teachers of high track classes tended to list as a part of course content activities and skills that require higher levels of cognition than did teachers of classes at other track levels. And, teachers of high track Enslish classes were more likely than others to be concerned that their students learn behaviors that would enable them to function autonomously and think critically. Students in low track classes in both subjects, on the other hand, rarely encountered these types of learnings. The knowledge provided to students in these classes was typically basic literacy or computation material or topics oriented to everyday life and work. Activities and skills listed by teachers usually required only low level cognitive processes. The non-subject-related behaviors included as course content by English teachers were those that encouraged student conformity to rules and expectations. In addition to these qualitative differences that point to inequity in curricular content, the differences in the quantity of instruction or time in learning activity adds support to this impression of inequity. High track classes spent more time in instructional activity during class than did low track classes. Furthermore, high track English students were expected by their teachers to spend more time on homework than were students in the low English tracks. It seems clear, then, in both aspects of curricular content considered--quality and quantity--that substantial inequities existed among classes at different track levels, with students in the low tracks experiencing noticeably less of both than other students.

Instructional practice and tracking. The second objective of the study was to explore how instructional practices that have been identified in the literature as effective (in the sense that they are strongly associated with student achievement) were distributed among track levels. The data were analyzed to determine whether track levels differed in teacher variability, teacher clarity, and teacher enthusiasm--three such effective practices identified by Rosenshine and Furst (1971) in their review of research on instructional practice. Again, the findings from the data made clear that significant differences existed among track levels. In all four analyses meaningful differences were found in teacher clarity and in teacher enthusiasm. In senior high math and in junior high English differences in all three practices were found.

The second aspect of the research objective, however, was to determine whether any differences which emerged from the analysis of data resulted in the unequal distribution of these effective teaching practices among track levels in schools. If exposure to effective instructional behaviors was found to be limited to certain groups within schools, it could be concluded that inequality in the distribution of school knowledge was a likely result. An unequal distribution, in fact, was indicated by the data. At both schooling levels, effective instructional practices were found to be more characteristic of high than of low track classes. Indeed, among English classes, instructional practices were distributed among tracks in a way that students in the lowest group were the least likely of any to experience the type of instruction most highly associated with achievement. And, in both subjects, if students in low tracks had consistently less exposure than high track students to effective teaching practices, it seems likely that their access to achievement was not equal to those students in classrooms where these practices were more often found. However, caution must be exercised at this point. The variables considered here--teacher variability, teacher clarity, and teacher enthusiasm--are only a small part of the constellation of teacher behaviors that may influence student achievement. Our knowledge of teaching effectiveness, at this point, does not permit a definitive statement about what group of teacher behaviors is consistently linked with learning. While the three included in this study have been found to be highly associated with learning, the presumption of a causal relationship is premature. Nevertheless, we can say, with certainty, that in the 297 classes studied these teaching practices were distributed differentially among track levels with students in the low track classes receiving substantially less exposure to them than students in high track classes.

Classroom social relationships and learning interactions and tracking. The third research objective was to examine whether students in classes at different track levels participated in different types of social relationships and interactions. Three distinct areas were explored in the data in an attempt to make this determination. In the areas of teacher-student relationships and teacher affect significant differences were found among track levels over all secondary classes in both subjects. High school classes differed primarily in the amount of class time spent on student behavior and discipline and in students' perceptions of their teachers as concerned or punitive. At the junior high level, differences were greatest in students' perceptions of teachers as concerned or punitive and in the positive expressions teachers made toward their students in their interactions with them.

Student-peer relationships and students' positive and negative feelings about their classroom also were significantly different among track levels. Differences in student-peer relationships were exhibited most strongly in students' feelings that other students were unfriendly to them and that they were left out of class activities. Differences were also found in the extent to which students expressed a willingness to participate in class activities (Compliance scale) and in the amount of disruption and apathy reported by students. Differences in the levels of peer esteem and reported competition among students within classes were found as well.

The type of student involvement in learning interactions did not differ significantly among tracks. Nor, were there trends in most of the data that indicated that student involvement in the learning activities in classes at each level tended to be characterized as either active or passive, involved or uninvolved.

The second aspect of this third research objective was to explore whether any differences found in these three aspects of classroom social relationships and learning interactions indicated that students may be led differentially to passivity and alienation from the classroom experience or to involvement and affiliation with it. The differences found seem to point to inequities in this area. While the interactions and type of involvement directly related to learning activities did not differ meaningfully among tracks, it is important to recall from the earlier discussion that the content and extent of this instructional activity did, indeed, vary in that students in low tracks experienced less than others. This difference in quantity itself may indicate less student involvement, even though the type of involvement was not seen to be different.

Differences in the social relationships among students and teachers and students and their peers and the differences in both teachers' and students' expressions of positive and negative feelings about their classes seem to point clearly to the conclusion that students in high tracks had interactions with others which were more positive and, therefore, more likely to enhance their classroom experiences than did low track students who experienced more negative classroom relationships which, in turn, were more likely to alienate them from the classroom.

For example, students in high track classes saw their teachers as more concerned about them and less punitive toward them than did other students. Teachers in these classes spent less class time dealing with student behavior and discipline. Students in high track classes disagreed the most strongly that other students were unfriendly and that they felt left out of class activities. Students in high track classes were the most positive about participation in class. They reported the highest levels of peer esteem and the lowest level of disruption and hostility among their classmates.

Students in low track classes saw their teachers as the most punitive and the least concerned about them. Teachers in these classes spent more class time than high track teachers on student behavior and discipline. Furthermore, students in low track classes agreed the most strongly that other students were unfriendly to them and that they felt left out of class activities. They were the least positive about class participation. These students also reported the lowest levels of peer esteem and the highest levels of dissonance in their classes.

It is clear, from these findings, that the environments in classes at different track levels differed noticibly in the social relationships which took place in them. And, these differences certainly seem to indicate the existence of unequal opportunities to develop an affiliation with the classroom, the other people in it, and, perhaps, even schooling itself. These differences in classroom social atmospheres gives further support to the speculation that education in the schools studied was not available to all on equal terms.

Student attitudes and tracking. The fourth research objective was to determine whether students in classes in different track levels expressed different attitudes toward themselves, their futures, and their schooling experience. Significant and consistent differences in these attitudes were found in all four analyses--in both subjects at both levels of schooling. These differences were exhibited, for the most part, in students' general and academic self-concepts and in their educational aspirations. Students attitudes toward themselves in relation to their peers or toward their schools, subjects, or classes did not consistently discriminate among track levels.

The second aspect of this research objective was to examine whether the patterns of differences found among track levels were consistent with the "legitimation of inequality" concept, the proposition that the essential outcome of differential schooling experiences is that students will have modified or have had reinforced their views of themselves and their aspirations in such a way that those from the bottom of the societal heirarchy will fit themselves to lower positions in society. An important corollary to this proposition is that students will view the heirarchical structure of society and their prospective places in it as legitimate.

In fact, the data did show patterns of student attitudes among track levels that can be viewed as consistent with this cultural reproduction view. Students in high track classes reported the highest levels of educational aspirations. Consistent with these educational plans were the more positive academic self-concepts reported by these high track students. Low track students, on the other hand, reported the lowest educational aspirations and the most negative academic self-concepts of any of the groups. These differences attest to the existence of different expectations for their future roles in society among students in different track levels. It is the patterns among the other variables, however, that are most consistent with the notion of legitimation. Importantly, students in low track classes expressed no less satisfaction with their schooling experiences than did other students. They graded their schools as highly as students in other track levels. Generally, they said they liked their subjects as well and rated them at about the same level of importance as did other students. Low track students were about as satisfied as others with the classes they were in and regarded what they were learning to be as interesting as students in other tracks. Nevertheless, low track students had the most negative attitudes about themselves generally, disagreeing less than others that there were a lot of things about themselves they would change, that they were not as well liked as most people, and that at times they thought they were no good at all.

The juxtaposition of these three sets of attitudes among low track students points to a pattern of attitudes which would be likely to facilitate the legitimation of inequality. Students in low tracks had lower aspirations, felt more negative about themselves academically and expressed more feelings of unworthiness than did students in higher classes. Yet, in judging their schools--embued with heirarchical structures--and their classes--characterized by the inequities in day-to-day processes observed throughout this study--they reported the same levels of satisfaction as other students. We can only speculate, but it may be that low track students see themselves and their own inadequacies, not the heirarchical structure or differential treatment of the schools, as responsible for their current positions and future roles in the heirarchical structure. Furthermore, they appear to see the schools as acceptable as do students at the top, whose schooling experiences and attitudes about themselves and their futures are quite different.

If socioeconomic and racial groups were randomly distributed among track levels in schools, we might conclude, as it seems that most students must, that the school is essentially neutral, and one's position in it is dependent upon individual merit. However, both the literature in the field and the results of this study attest to the disproportionate distribution of societal groups into track levels. For this reason, we must suspect that school structures and processes contribute to societal inequities rather than simply function as the neutral setting for a competition for social and economic rewards based only on individual merit.

The place of average and heterogeneous groups. The findings regarding track level differences in all areas investigated point clearly to inequities in the classroom experiences of students in high and low classes. Important, too, is the question of how the experiences and attitudes of students in average classes compare to those in high and low tracked groups. And, perhaps even more significant--since implications for educational practice may flow from it--is the assessment of the experiences and attitudes in classes that are composed of a heterogeneous student population. The analysis phase of the discriminant analyses provided information about how average track classes differed from the high and low groups. The classification phase indicated which track level heterogeneous classes were most like on each of the dimensions studied.

In most of the areas studied, average classes fell somewhere between the high and low tracks. This means, for example, in the area of curricular content that while the topics of instruction were not as oriented toward college preparation in average as in high track classes, they were certainly more so than in low track classes. And, furthermore, while the quantity of learning time was less in the average group than in the high, it was greater than in the low track classes. This pattern of average groups falling between high and low tracks occurred at both schooling levels on 17 of the 22 significant functions derived in the analyses.

Nevertheless, in three of the analyses, scores on the first discriminant function followed a different pattern with low track scores falling between those of the high and average tracks. This pattern occurred in the analyses of instructional practice in junior high school math and in student teacher relationships in both junior and senior high school math. In both analyses where the second discriminant functions were significant--although accounting for considerably less of the variance among tracks than the first--this atypical pattern of scores also occurred. The second discriminant functions in instructional practice in senior high math and in student peer relationships in senior high English followed this pattern. Generally, however, track levels were separated in a heirarchical way with high and low tracks at opposite ends of the dimensions studied and the average track in the middle.

Not only were average classes between the high and low tracks on nearly all the dimensions studied, in many of the English analyses the group centroids on the discriminant functions indicated that average classes were somewhat closer to high track classes than to low. This relative similarity of high and average classes was seen in curricular content at both levels, in instructional practice at the junior high level, in teacher-student relationships at both levels, and in most aspects of student-peer relationships at both levels. Only in instructional practice at the high school level, in the peer competitiveness-esteem-apathy dimension and in junior high student attitudes were average classes more like low track than high.

Among the math analyses, this pattern of relative closeness of high and average classes and, as a result, the relative isolation of the low track was not so often found. Only in curricular content at both levels, in senior high instructional practice, and in junior high teacher-student relationships was this the case. In the other analyses, average classes were either equidistant from the other two groups or closer to low groups than to high.

The heterogeneous classes were more often found to be like average or high track classes than like low classes in the classroom processes studied in both subjects and at both levels. Only a very small percentage of heterogeneous classes resembled the group of low classes studied. The one exception to this pattern in English was in the area of instructional practice where 52 percent of the heterogeneous classes at the junior high level were classified by the analysis as belonging in the low track group. The one exception to this pattern in math was in the area of curricular content at the senior high level where 67 percent of the heterogeneous classes were most like those classes in the low track. For most of the English analyses, the largest percentage of heterogeneous classes were most like those in the average track. Moreover, for most of the constructs in math and many in English, the largest proportion of the heterogeneous classes most resembled those in the high track: in curricular content in both subjects at the junior highs; in instructional practice at the senior high level in both subjects and at the junior high level in math; in teacher-student relationships and teacher affect in both subjects at the senior highs and in math at the junior highs; and in student-peer relationships and student affect in both subjects at the senior highs and in junior high school math.

These findings about average and heterogeneous groups lead to two important conclusions. First, they point in English to the relative isolation of low track classes from all other groupings. This is demonstrated in the fact that while, in most cases, the average classes were quite distinct from the high track classes, they were considerably closer to them in the characteristics studied than they were to low track classes. That heterogeneous classes in both subjects were identified most often as similar to high and average classes lends additional support to the impression of low classes as being quite separate. English heterogeneous classes being classified as average classes on most of the dimensions in itself indicates that their scores on the discriminating variables were closer to those of high track classes than to those of classes in the low track. That a considerable percentage in both subjects were classified as high classes makes this even more clear.

The second conclusion relates specifically to a popular notion about teaching and learning in heterogeneous groups. A widely held view is that heterogeneous classes are geared for the "lowest common denominator" and instruction in these classes is aimed at a level just below the average of the students in the class. Translated into how this belief might have revealed itself in the current study, we would expect that heterogeneous classes would have been classified predominately as in the average group, but with a substantial portion of them classified as low track as well. We would expect that very few--indeed, if any--heterogeneous groups would have characteristics most like classes in the high track. The findings, in fact, were in the opposite direction. As noted above, substantial percentages of heterogeneous classes were classified as being most like high track classes in most of the analyses. These findings, as a result, do not support these commonly held assumptions about what heterogeneous classes are like. To the contrary, the findings point to a description of heterogeneous classes as being considerably more advantaged in terms of classroom content and processes than many average and nearly all low track classes.

In the area of student attitudes, on the other hand, heterogeneous classes followed somewhat different and inconsistent patterns. In English at the junior high school level more heterogeneous classes were identified as being like the low track than in any other group, yet 29 percent of the classes were determined to be like high classes. In math at this level, heterogeneous groups were fairly evenly distributed among track levels. In senior high English most heterogeneous classes were classified into the high track, yet no senior high heterogeneous math class was classified this way. These separate analyses give the impression of a great deal of variety among heterogeneous classes the area of student attitudes. The student attitude dimension, it should be remembered, involved the averaging of characteristics and attitudes of individuals in classes rather than assessing the collective perception of a class characteristic as the classroom processes analyses did. In view of the heterogeneity in achievement levels of class populations--and probably a very uneven distributions of types of individuals among the classes--the variation on this more individual dimension is not terribly surprising. Substantively, this finding can be interpreted to mean that the average level of educational aspirations, academic and general self-concepts varied considerably among heterogeneous classes. Because the variables were not important in discriminating among track levels, no conclusions can be drawn about the level of satisfaction of students in heterogeneous groups compared with those in tracked classes based on the discriminant analyses. Univariate analyses of each of these satisfaction variables, however, showed that few significant differences occurred among track levels and the heterogeneous groups of classes in three of the samples--senior high English and math and junior high English. In junior high mathematics, however, significant differences were found on all these variables. In each case, the heterogeneous group had either the highest or second highest level of satisfaction on the variable (see Appendix C for F ratios on these variables). So, in the sample of classes studied here, it was found that when significant differences among groups of classes occurred in the area of student satisfaction, heterogeneous classes tended to have students with higher levels of satisfactions than did the tracked classes.

The Findings and the Theory of Cultural Reproduction

Those scholars who discuss the role of schools as agents of cultural reproduction view inequities in the educational experiences of students such as were found in this study and the differences in students' attitudinal and achievement outcomes which may be linked to these experiential differences not as the products of inadequate educational technology. Neither do they view these differences as resulting from the inefficient functioning of schools as many other school critics do. These technological explanations of within-school differences and inequities assume the school to be a neutral institution--not biased in its functioning toward the interests of any one group in society, but simply inadequate to meet the needs of the variety of students it encounters. These explanations are rooted in the widespread belief that schools, themselves, are meritocratic and through them individuals, regardless of their social, economic, or ethnic background, are able to realize their potential and achieve economic and social mobility. When this mobility fails to occur, especially for identifiable groups of children such as the poor and minorities, explanations of the types cited above are often given. Less generous traditionalists, however, often look to the individual students or groups of students themselves for explanations of differences in schooling experiences and for sources of educational failure--lack of individual motivation, cultural deficiencies, or genetic handicaps, for example.

Cultural reproduction theorists accept none of these explanations as ways of accounting for differential student educational experiences and outcomes. They, rather, view schools as institutions structured and operated in a way that insures the maintenance of current social and economic stratification--complete with the inequities that are a part of the current social order. Differences in experiences and outcomes, then, are seen as necessary elements in this process of social and economic reproduction.

The research objectives that guided this study were grounded in propositions regarding differential school experiences taken from this cultural reproduction view of schooling. Specifically, the objectives were to determine to what extent differences in classroom processes associated with different track levels of classes would support the following assertions: 1) The distribution of knowledge among social, economic, and other groups is uneven to the end that high-status knowledge is distributed disproportionately to students from priviledged and impoverished backgrounds, with the exposure to this knowledge largely limited to the former group. 2) The means of knowledge distribution (instructional practice) is differentiated in such a way that school knowledge is more accessible to students who are already advantaged than to those who have less priviledged backgrounds. 3) Classroom social relationships and interactions are different for some groups of students than for others. These differences are such that the classroom relationships students experience tend to socialize those from the lower end of the social and economic hierarchy toward passivity, the acceptance of authoritarian institutional relationships, and alienation from the educational environment. At the same time, students from the upper strata have experiences that tend to socialize them toward active involvement, an expectation of institutional relationships characterized by warmth and concern, and an affiliation with the educational environment. 4) The production or reproduction of differences in non-cognitive outcomes for students--attitudes toward a hierarchical society, toward themselves, and toward their appropriate places in the hierarchy--is partly a result of differential schooling experiences. Through these experiential differences students come to accept unequal structures as neutral and based on merit. Those students from the upper strata acquire or have reinforced high future aspirations, while those students at the lower end of the hierarchy acquire or have reinforced low aspiration levels.

These specific propositions can be used to guide the interpretation of the findings of the study as well. And, to the extent that the differences found are consistent with or illustrative of these propositions, they can be said to lend empirical support to the cultural reproduction view. To the extent that the findings seem to contradict these assertions, they can point to aspects of this theoretical position which may not adequately explain the observed classroom experiences.

First, it is important to reconfirm the validity of using tracking as an organizational feature of schools that divides students into groups that are reflective of social and economic divisions in society. For only if this parallel is clear can the differences which exist among track levels be viewed as possible mechanisms of cultural reproduction. Both the literature in the field and the findings of this study (albeit to a limited extent) support the relationship between socioeconomic status--including race--and membership in classes at different track levels in schools. The literature, discussed to some extent in Chapter I, has firmly established the strong relationship between the race and socioeconomic status of students and their track level placements in schools. This relationship is such that students from the upper socioeconomic levels are most likely to be found in the highest track levels and, as expected, students from minority groups and low socioeconomic levels are most likely to be found in classes at the lowest track level. Whether or not these factors affect track placement directly or are mediated through the mechanisms used for assessing aptitude and achievement--and there is considerable debate in the literature on this very point--the relationship is both strong and consistent. The findings from this study, too, support the parallel between stratification in society and that in schools. In the multiracial schools in the study minority and white students were found in disproportionate percentages in high and low track classes. Furthermore, this relationship was most consistently found in schools where minority students were also poor.

With this relationship between tracking and stratification in the larger society clearly established, we can proceed to examine track level differences from the cultural reproduction perspective. Differences found can be assessed for their potential contribution to the maintenance of social and economic inequities among groups in society.

Young (1971) and Bordieu and Passeron (1977), among others, assert that some groups have access to more power in society as a direct result of the kinds of knowledge available to them and not to others. The distribution of power, then, is maintained by the distribution of knowledge in institutions (schools) which are controlled by the already powerful. In schools high-status knowledge--that which provides access to power--is restricted for the most part to the children of those who already possess considerable amounts of economic and social power. Apple (1978) defines this high-status knowledge in secondary schools as that highly academic knowledge which provides access to the university.

The findings in this study regarding the unequal distribution of instructional topics and skills which are considered prerequisite to university attendance support this view. Students in high track classes, whom we know to be predominantly white children from the middle and upper socioeconomic levels, were those students presented with this high-status knowledge. The findings show, as well, that the unequal distribution of knowledge among track levels was coupled with unequal amounts of learning time for students at different levels, with students at the top being provided with the largest quantity of time in which to learn. Further, enhancing this differential distribution of high-status knowledge and the time advantages provided those at the upper levels of both the schooling and societal heirarchy are the differences found in the area of instructional practice. The exposure to effective teaching behaviors certainly facilitates the learning of concepts and skills, just as the absence of effective instructional practices, no doubt, inhibits learning. That students in high tracks were more exposed than other groups to instructional practices that are highly associated with student achievement further supports the assertion of an unequal distribution of knowledge in a direction that favors the already privileged.

In summary, given the research clearly establishing the parallel between tracking and social stratification, the findings of the study in the areas of the quality and quantity of curricular content and instructional practice clearly provide empirical support to the proposition that the distribution of high-status knowledge in schools serves to reinforce and reproduce the inequities in the larger society. Track levels in schools, reflective of social and economic groupings in society, were provided with differential access to school knowledge in such a way that the children of more powerful societal groups had greater access to the kind of knowledge which may, in turn, permit them greater access to social and economic power than did other students.

The importance of classroom social relationships in the reproduction of societal inequities is most clearly articulated in the work of Bowles and Gintis (1976) and Basil Bernstein (1978). Bowles and Gintis assert that it is through these social relationships that the values and personality characteristics necessary for the maintenance of a capitalist society are produced in students. With students from the lower social strata--those seen as most likely to enter the manual labor force--school and classroom relationships are such that an acceptance of coercion and obedience to established authority are learned by students. On the other hand, with students from the upper social levels--those most expected to enter elite position--relationships are such that students learn independence, internal control, and affiliation with others. Bernstein emphasizes the differences in involvement with the educational experience that develop from the different social relationships students experience in schools. Bernstein suggests that when schools separate students--usually in groups parallel to social classes--for the learning of skills necessary to fulfill various roles in society, they socialize students toward different kinds of involvement with institutions as well. Bernstein theorizes that it is likely that a lower class student placed in a homogeneous group will become increasingly uninvolved and alienated from school as a result of the authoritarian relationships that develop from the emphasis on rewards and punishments that characterizes these environments. At the same time, students from the upper social levels will have the higher levels of affiliation with education, and institutions in general, they bring from home enhanced by the involving and less coercive relationships they experience in schools. Thus, Bernstein and Bowles and Gintis all suggest that the type of social relationships different groups of students experience in school are important in the creation of values and attitudes in students. They agree, also, that these values and attitudes prepare students to accept the conditions of the places the social, occupational, and economic hierarchy that they are expected to assume based on their social class origins.

The findings of this study clearly support the assertions concerning the kinds of differences that exist in the social relationships in different kinds of classes in schools and provide empirical evidence for some of the effects of these differences posited by Bowles and Gintis and Bernstein. On the other hand, some of the suggested effects of these different kinds of relationships were not found. The data support the notions of Bowles and Gintes and Bernstein in that relationships in classes where poor and minority students are most likely to be found--low track classes--were more characterized by alienation, distance, and authority than were high track classes. The greater proportion of time teachers spent on discipline and student behavior, students' perceptions of their teachers as more punitive and less concerned about them, the more negative feelings and behaviors students reported they exhibited toward one another, and the more negative student attitudes expressed toward classroom experiences which were found in low track classes certainly support this view. And, at the same time, the proportionately less time spent on behavior by teachers, students' perceptions of teachers as less punitive and more concerned about them, the lower levels of student hostility toward peers and apathy toward the classroom situation, and the less frequent student reports of feeling isolated found in high track classes all seem to provide support for Bowles and Gintis and Bernstein's assertions that those at the upper levels experience relationships which lead them to affiliation with the schooling experience.

Yet, there is no support in the findings for the hypothesis that students from different groups have different types of involvement with their schooling experience as a result of the type of social relationships they experience. While these differences certainly may have existed, the variables used to measure students' opportunities for--or demonstration of--either "active" or "passive" involvement did not reveal them. Track levels were not characterized by either predominately passive or active learning activities, nor did significant differences in active student participation exist in what took place in the classroom. Furthermore, no differences were observed in the number of opportunities students had to direct classroom activity, to express opinions, or to work cooperatively together. From the summary statistics, in fact, it is clear that, in all types of classrooms, students were primarily passive participants. There is little evidence in any of the data--except in the responses of the small percentage of teachers who said they wanted their students to learn autonomy, critical thinking, and self-direction--that the structure of learning activities was such that students participated in decision-making or in classroom or group leadership for any more than a small fraction of class time.

A caveat is necessary here, however, in regard to the definition and measurement of involvement used in this study. While involvement may be reflected in observable or reported behavior, in its most fundamental sense involvement is an internal state not in itself observable. Thus, when activities or situations are defined as demanding "active" or "passive" involvement this refers only to the kinds of behaviors which reflect these states, not the actual kinds of internal involvement which may be present. This is an important distinction because very different states of involvement--or levels of engagement--may be occurring in students despite similarities in observable behavior. This is especially true during the kinds of learning activities labeled here as "passive"--listening to the teacher, for example. One student may be totally engrossed, participating fully in the experience; another may be only partly attending. Both students, however, appear to be passive. Therefore, in this study, when the findings show no differences in the "passive" or "active" nature of classroom learning activities at different track levels and as a result suggest that there is no evidence of differences in the kind of student involvement in learning activities, it should be remembered that the findings cannot speak to the question of differences in involvement of the internal type. The instruments measured only what kinds of learning activities students did and what happened during the course of instructional activity. Students were not asked how involved they were in the learning process. It is possible, then, that different kinds of internal student involvement may have existed in classes at different track levels in this study and that these differences resulted from the types of classroom relationships and interactions students experienced. But this issue is beyond the limitations of the definition of involvement and the variable measures used in this study. As a result, the conclusion made from these findings can only be that no meaningful differences in activities and interactions which seem to be reflective of either passive or active student involvement were found.

Differences in non-cognitive student outcomes resulting from differences in schooling experiences are discussed by cultural reproduction theorists as essential to the maintenance of the social and economic hierarchy. Bowles and Gintis have termed both the process and result of effecting these student attitudes the "legitimation of inequality." The student attitudes they posit are the following: 1) all students come to accept the unequal and undemocratic features of the larger society as neutral and the assuming of various positions within it as based on merit; and 2) students come to be either satisfied with or resigned to their own positions in these unequal structures since they are seen as determined by individual capabilities which students have come to accept as a result of their experiences with "competition, success, and defeat in the classroom" (p. 106). As a result, in the cultural reproduction view, students from the top of the social and schooling heirarchy view upper level positions as appropriate for them and adjust their aspirations and self-perceptions accordingly. And, conversely, students from the bottom accept lower positions as those that are rightfully theirs and have accompanying lower levels of aspiration and more negative views of their abilities to succeed.

The findings from this study show that student attitudes are distributed among track levels in ways that are consistent with this cultural reproduction view. Classes in the high track groups consistently had students with the highest of aspirations and the most positive views of themselves both generally and specifically in relation to academics. And, as might be expected from other studies in this area, students in low track classes reported the lowest levels of aspiration and the most negative feelings about themselves both academically and generally. Additionally, important differences in students' levels of satisfaction with their schools, subjects, and classes were not found among track levels. This similarity in reported satisfaction among tracks could be a result of many factors. However, it is important, in view of the "legitimation of inequality" thesis, to note that low track students did not express lower levels of satisfaction despite the evidence that they are at the bottom of an unequal hierarchical schooling structure. We cannot attribute this lack of dissatisfaction to a perception on the part of students in the low tracks that schools are neutral and meritocratic, nor to a belief that their own inabilities are responsible for their positions in them. But, neither does this lack of dissatisfaction coupled with more negative self-concepts and low aspirations provide evidence contrary to this view. In fact, these findings seem to be what would be expected given the cultural reproduction hypothesis.

In sum, the findings of this study provide empirical support for the assertions regarding differential school experiences of scholars who propose the cultural reproduction theory of schooling. In all three areas of classroom process examined--curricular content, instructional practice, and social relationships and interactions--the differences found among track levels seem to be illustrative of tenets of this theoretical position. And, the data on student attitudes show that classes at different track levels consisted of students whose attitudes tended to reflect this view as well. This in no way, however, implies that the findings of this study *confirm* this perspective of the function of schooling. But it does mean that the classroom processes and student attitudes investigated in this study were found to operate in a way consistent with this view. Students in classes at the highest track levels received greater--if not nearly exclusive--exposure to high-status curricular content. These students had their opportunities to learn this knowledge enhanced by being provided with greater amounts of time in instructional activity and having greater exposure to selected instructional practices which are associated with student achievement. Further, these high track students, more than others, experienced social relationships in their classrooms characterized by positive feelings among students and teachers and students and their peers. On the other hand, students in the lowest track classes were predominately exposed to basic literacy or work-oriented types of knowledge. They had the least time allocated to learning activity, were the least exposed to effective instructional practices, and had classrooms more characterized than others by punitive and hostile relationships among teachers and students and among students and their peers. Additionally, both the similarities and differences in attitudes reported by students in high and low track levels were those likely to exist if, indeed, the schooling differences they experienced were seen by students as a consequence of their individual merit or lack of it and not resulting from any unfair practices on the part of schools.

These differences point clearly to inequities in the educational opportunities of students in these two track levels. And, because the evidence is clear that track levels are largely reflective of racial and socioeconomic differences among students, we can conclude that the findings of this study point to inequities in the educational opportunities of students from different racial and socioeconomic groups within schools through tracking. These schooling inequities, in turn, clearly support the notion that schools function to maintain the current social order, including the existing social and economic inequities among groups. The implications of these findings, too, are that schools are biased toward the interests of the most powerful groups in society in that the best educational experiences--and those that are most likely to enhance access to higher education and, eventually, social and economic power--are reserved for those students who are already advantaged.

The Reorganization of Secondary Schools Toward More Equitable Classroom Experiences

Whether or not one accepts the view of the cultural reproduction theorists that school failure is inevitable for some students because of the need to maintain the heirarchical structure of capitalist society and that the negative character of schooling for some students results from the need for repressive schools to maintain a repressive society, it is clear that the differences in educational outcomes and in the day-to-day schooling experiences for different groups in society may have these effects. The inequities associated with schooling clearly correspond to the inequities in the larger society. And, the conduct of schooling certainly benefits those at the upper societal levels and burdens those at the bottom. This direction of inequity has been supported almost universally in studies of schooling outcomes and is evidenced as well in this study and others of the experiences of different groups of students within the same schools.

This clearly established link between educational inequity and inequities in the larger social structure has important implications for educational reform. This relationship between school reform and broader social reform toward equity has been widely considered in educational theory and research. As is well known, one of the guiding ideologies of American education has been that with the expansion of schooling would come greater opportunities for economic and social mobility for members of all groups, resulting in a social structure based more on merit than on race or social status. This view, however, has not been borne out in the research that has considered the effects of schooling expansion. After decades of reform in this direction, class and race still emerge as major influences, not only on the level of school attainment, but on adult social and economic status as well. Yet, many still believe that school reform toward the provision of more equitable education for all groups is a viable first step in the larger movement toward a more egalitarian society. Educational innovations such as open schools and multicultural curricula have been based, in part, on the notion that if schools can be reconstructed so that the individuals who leave them value human diversity and are intolerant of exploitation, broad social changes through the subsequent reform of other institutions by these individuals can result. It is clear, however, from the research over the last two decades that these kinds of reforms have proven exceedingly difficult, if not impossible, to implement fully in public schools.

The more radical critics of schooling--and most of the cultural reproduction theorists are among this group--are more pessimistic about the possibility of educational reform. They believe that, without major shifts in the distribution of economic and political power, school reform toward equity is impossible since the elite groups who now control schools would never permit these reforms to occur.

Nevertheless, whether school reform can preceed and stimulate broad social reconstruction or can only result from it, it is clear that, if equity is to be attained, educational reform should comprise only one aspect of broader ideological and structural shifts in American society. Ideally, the equalization of the benefits of education for all groups should be a reflection of a movement toward a more equitable social system--one in which racial and ethnic diversity are valued and the access of all groups to political, economic, and social power is insured. However, as the history of the struggle for equality clearly shows, these far reaching changes seem neither easily attained nor close at hand.

Given this unliklihood of educational reform in the context of broad social resonstruction and the apparent impotence of school reform to trigger major economic and political changes, it seems important that school reformers focus their efforts toward slightly more limited ends. If school change does not appear to result in a society that is fair and equitable, perhaps educational reform should concentrate its efforts on making schools, themselves, fair and equitable places for students to be.

This focus on creating more equitable schools seems to imply reforms toward two discrete but related ends. First, the extrication of schools from their roles as agents in producing inequities in the larger society seems essential. Toward this end, schools should cease to sort and select students for future roles in society. Second, schools must concentrate on equalizing the day-to-day educational experiences for the students in them. This implies altering the structures and contents of schools which seem to accord greater benefits to some groups of students than to others.

This focus on more equitable schooling, as an end in itself, is not new, of course. Many reforms toward this end have been suggested in the literature ranging from Illich's deschooling proposals to Jenck's notion that schools should simply concentrate on improving the quality of life for the children and adults who are in them. Whether or not this limited reform would serve as a catalyst of reform on a broader level is only tangential to the central issue arising from this perspective. The crucial issue here is that when specific schooling practices are found to give unequal benefits to some groups of students and impose unequal burdens on others, then these practices must be altered. While the question of the long term effects of these reforms on equity in a more global sense is certainly of the utmost importance, the staggering complexity of this larger issue should not be allowed to paralyze attempts at specific reforms.

The findings of this study, too point toward school reform directed at eliminating structures and contents of schooling that play a role in creating and maintaining inequities in the larger society and produce inequities in the daily experiences of students in school. These findings point to one structural element of schools--tracking--and to the differential classroom processes associated with it that both serve to screen students and contribute to day-to-day schooling inequities. Thus, the reform of organizational patterns in secondary schools and the classroom processes associated with them seems essential in this move toward more equitable schooling.

Specifically, the findings of this study indicate that secondary schools should be reorganized so that students are no longer separated into homogeneous ability or achievement groups. And furthermore, whatever type of reorganization replaces tracking should not result in the separation of racial and socioeconomic groups nor in the creation of classroom groups which result in inequities in students' classroom experiences.

The question that, unfortunately, cannot be answered directly with the findings of this study is that regarding the substance of the necessary reforms toward these ends: What organizational pattern can be used to replace tracking which would promote more equitable schooling?

While definitive answers do not come out of this study, some likely directions do emerge. One important finding was that in most of the classroom processes studied, heterogeneous classes most resembled average or high classes. Few of these heterogeneous groups were found to have either the limited content or the inhibiting climates that were found to be typical of low track classes. Thus, the widely held belief about heterogeneous groups being geared to the "lowest common denominator" was not supported by the data from the classes studied. In addition, although the literature on grouping and student achievement has not established that heterogeneous grouping enhances cognitive outcomes, neither has research found that heterogeneous groups inhibit student learning. Taken together these findings seem to support the hypothesis that heterogeneous grouping reflecting not only the full range of student achievement and aptitudes, but also the socioeconomic and ethnic diversity of schools, is an organizational pattern that would provide more equitable educational experiences than does a system of tracking.

It seems likely, in fact, that the reorganization of schools so that the predominant pattern becomes the use of heterogeneous groups could equalize students' educational experiences in several ways. First, if students were given a common curriculum, ideally comprised largely of the high-status knowledge now primarily reserved for students in high tracks, the closing off of students' access to future opportunities would be considerably postponed. All students would be exposed, at least, to those concepts and skills which permit access to higher education. Nevertheless, while it would be hoped that the medium of instruction would be varied in classrooms to accommodate a variety of learning styles and further equalize students' opportunities to learn, differences in students' acquisition of this knowledge would be a likely result. These differences, however, would not be predetermined by the structure of the school. Nor would there be institutionalized expectations regarding which students are likely to achieve the most. With tracking, what knowledge a student acquires is largely influenced by what group he or she is placed in. Relying on assumptions about the value of homogeneous ability and achievement grouping, schools use testing and other sorting mechanisms to separate students according to their differences in these areas. The belief is that these identified differences are predictive not only of the amount of knowledge a student is likely to acquire, but also of what kind of knowledge is most suited to his or her needs. Schools, then, institutionalize and magnify these differences by identifying them with labels and imparting different kinds of knowledge and treatments to students in various categories. With heterogeneity, on the other hand, these limiting distinctions among students would be minimized by the organizational pattern of the school. Additionally, heterogeneous groups would provide an environment more responsive to changes in students' motivations, interests, and aspirations: all factors which may influence the kind and amount of knowledge a student acquires. The exposure to a common curriculum and a teaching-learning environment more receptive to changes in students should postpone the sorting and selection process--now being accomplished by tracking--until after the completion of secondary education. This would both remove the burden of selection from the secondary schools and provide students with additional time to exercise choice about their future plans. Additionally, this change may result in all students at the conclusion of their secondary education having had more exposure to high-status knowledge, more time spent in learning activity, more exposure to effective instructional practice, and more positive social relationships in classrooms than many students--especially the poor and minorities--seem now to experience with tracking.

As we have noted, school practitioners generally have held two beliefs that serve as rationales for their preference for homogeneous over heterogeneous grouping patterns: 1) that individual learning is maximized for individuals in homogeneous groups; and 2) that the instructional task is simplified when the range of student differences in class groupings is narrowed (NEA, 1968). It is important to address these two views in the context of a proposal to reorganize secondary schools toward heterogeneity, since in school rhetoric, at least, they appear to be major barriers to this change.

First, the assertion that individual learning is maximized in homogeneous groups is easily dealt with. As discussed previously, the considerable amount of research on this issue just does not support this view. The second statement, however, is not so easily dismissed. Nevertheless, some issues central to this statement can be clarified.

One fundamental question embedded in this statement is to what extent the range of student differences is really narrowed in classrooms by tracking. It is clear that homogeneously grouped students share some characteristics--most probably measured aptitude or achievement and socioeconomic status. Yet, even with a more limited range in these two characteristics considerable variation exists among students, certainly in learning styles and learning needs as well in a whole host of other areas--motivation, interests, and creativity, to name just a few. So, even when working with homogeneous groups, teachers must deal with considerable student diversity.

Another consideration arising from this rationale of "easing the teaching task" is the relative nature of what seems easy. Perhaps, what appears to be instructionally easy is largely a reflection of what teachers are accustomed to, the traditional way of conducting instruction. Moreover, some traditional instructional methods, lecturing, for example, may be easier with homogeneous groups, especially with those labeled as high achievers. But, considering the complexity of the teaching task in a classroom of thirty or more students, these traditional ways may not, in fact, be the "easiest" way to maximize learning for all students. And, while it is clear that change is always difficult, with the use of less traditional instructional strategies--peer teaching, learning teams, learning centers, for example--teachers might perceive that heterogeneous groups are just as easy to teach as homogeneous ones. This, of course, is an area for further inquiry.

The most salient issue, however, coming out of this rationale for homogeneous grouping is the validity of the rationale itself. In view of the disparities in non-cognitive student outcomes touched upon here and well established in the literature and the inequities in the daily classroom experiences of students evidenced in this study that are highly associated with tracking, is simplifying the teaching task reason enough to continue this practice? It seems unlikely that many would say that it is.

Thus, the findings of this study indicate that, until a major social reorganization occurs that results in cultural, political, and economic equity for all groups or until a major reconstruction of schooling takes place in which the educational process creates individuals who will no longer tolerate an unequal social system, more limited reforms should be attempted to help equalize the effects of schooling. A reorganization of secondary school grouping patterns appears to be one such necessary reform. This reorganization may help to limit the role schools play in the maintenance of societal inequities. The replacement of tracking systems with heterogeneous groupings of students for classroom instruction would eliminate at least some of the formal processes in schools which contribute to the sorting and selection of students for future societal opportunities. Important, too, whether or not this long term effect is attained, is that it seems clear that the replacement of tracking with heterogeneous groups would effect considerably more equity in the daily experiences of students.

Some Questions Left Unanswered

As with most research, important issues arise from the findings of this study that cannot be addressed with the data, but merit some attention in the discussion of tracking and inequity.

First, is the question of intentionality. While the purpose of this inquiry was not to confirm the existence of a powerful and oppressive force that works to insure school failure and maintain social inequity, the findings are certainly consistent with this view. It would be easy, if overly simplistic, to look at the findings of this study and attribute the differential treatments accorded to groups of students and the differences in classroom environments to intentional efforts on the part of school people to limit the educational experiences of some students and augment those of others. Yet, even cultural reproduction theorists, Apple, for example, maintain that inequities stem from the cultural context and systemic properties of schools rather than from the intents of the adults within them.

Additional data from A Study of Schooling tends to support this view as well. When English teachers were asked which of one of four schooling functions should be emphasized at their schools, more than 85 percent of them chose either the intellectual or personal development of students over the social and vocational functions (Oakes,1980). If we view the social and vocational functions of schooling as having an instrumental focus--serving the economic and social purposes of the larger society--and the intellectual and personal functions as having a more intrinsic focus--acquisition of the intellectual culture and the development of individual thinking and expression--we can speculate that teachers may behave in ways that conflict with what they believe schools should do. The differential socialization--serving largely the social and economic needs of society--that is likely to result from the different classroom processes and teacher behaviors observed in this study appears to be contrary to the intrinsic functions of schooling which these same teachers say are the most important.

It may be possible, of course, that the behavior of adults in schools is more determined by the institutional structure than by their own intents. Or, it may be that the interaction which occurs between student characteristics and school characteristics produces classroom environments that result in unintended behaviors on the part of both students and teachers leading to the differences observed here. At any rate, the blame for the inequities perpetrated on different racial and socio-economic groups in schools should not be placed too quickly. It is clearly a subject for further inquiry.

Second, an important issue that arises from the findings of this study, when they are viewed in the context of the research on tracking and schooling outcomes, is that concerning the causal link between the inequities in school experiences observed here and the differences in student outcomes reported in other studies. Again, while it would be easy to assume, for example, that the more hostile and negative classroom relationships experienced by the low track students in this study explain the lower levels of self-esteem and higher levels of school deviance and dropping out of these students found in other studies, this connection has not yet been established. Furthermore, neither the data nor the methodology of this study can establish this link. Given the juxtaposition of these sets of findings, however, we can hypothesize about the relationship between differential classroom processes and student outcomes. And, it is clear that, given the liklihood of this connection, this issue certainly warrants further inquiry.

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APPENDIXES

APPENDIX A

CLASSROOM LEARNING ENVIRONMENT SCALES

CLASSROOM LEARNING ENVIRONMENT SCALES

SECONDARY STUDENTS

Teacher Concern (8)

1. The teacher makes this class enjoyable for me.
4. The teacher listens to me.
13. The teacher lets me express my feelings.
14. I like the teacher in this class.
-17. I wish I had a different teacher for this class.
21. I feel the teacher is honest with me.
22. This teacher is friendly.
24. The teacher is fair to me.

Teacher Punitiveness (6)

2. The teacher makes fun of some students.
6. This teacher hurts my feelings.
7. I'm afraid of this teacher.
9. The teacher punishes me unfairly.
11. The teacher makes fun of me.
16. The teacher gets mad when I ask a question.

Teacher Authoritarianism (8)

19. This teacher is too strict.
45. This teacher treats us like children.
49. This teacher will never admit when he/she is wrong.
56. We don't feel like we have any freedom in this class.
64. This teacher acts like he/she is better than we are.
69. This teacher "talks down" to us.
75. This teacher never changes his/her mind about anything.
82. I don't feel like I have any freedom in this class.

Teacher Favoritism (3)

47. The teacher likes some students in this class better than others.
-50. The teacher has no favorites in this class.
77. The teacher treats smart students in this class better than others

Teacher Enthusiasm (3)

38. This teacher seems to like being a teacher.
51. This teacher seems to enjoy what he/she is teaching.
-60. The teacher seems bored in this classroom.

Peer Esteem (7)

3. I help my classmates with their work.
8. If I am absent, my classmates help me to catch up on what I missed.
10. I like my classmates.
12. I like working with other students in this class.
15. In this class, people care about me.
18. If I had trouble with my work, most of my classmates would help me.
20. My classmates like me.

Student Decision-Making (8)

32. We are free to talk in this class about anything we want.
35. Students help make the rules for this class.
37. We are free to work with anyone we want to in this class.
40. We can decide what we want to learn in this class.
74. Students help decide what we do in this class.
80. Different students can do different things in this class.
91. Sometimes I can study or do things I am interested in even if they are different from what other students are studying or doing.
97. I help decide what I do in this class.

Classroom Dissonance (3)

41. The students in this class fight with each other.
54. The students in this class argue with each other.
107. Students in this class yell at each other.

Student Competitiveness (4)

48. There is a lot of competition in this class.
65. In this class, students compete with each other for good grades.
86. When I'm in this class, I feel I have to do better than other students.
90. Students in this class feel they have to do better than each other.

Student Cliqueness (3)

36. Some groups of students refuse to mix with the rest of the class.
68. Certain students stick together in small groups.
105. When we work in small groups, many students work only with their close friends.

Teacher Clarity (4)

62. The teacher uses words I can understand.
63. The teacher gives clear directions.
95. The students understand what the teacher is talking about.
109. I understand what the teacher is talking about.

Student Satisfaction (4)

96. Students feel good about what happens in class.
-101. I don't like coming to this class.
108. After class, I usually have a sense of satisfaction.
112. I feel good about what happens in this class.

Student Compliance (4)

53. I usually do my homework.
87. I usually do the work assigned in this class.
94. The students in this class usually do the work assigned.
104. I usually do everything my teacher tells me to do.

Student Apathy (4)

29. Failing in this class would not bother most of the students.
-33. Most of the students pay attention to the teacher.
34. Students don't care about what goes on in this class.
67. I don't care about what goes on in this class.

Classroom Physical Appearance (2)

70. The room is bright and comfortable.
111. I like the way this classroom looks.

Instructional Practices: Knowledge of Results (4)

30. The teacher tells us how to correct the mistakes in our work.
42. The teacher tells me how to correct the mistakes in my work.
43. This teacher lets us know when we have not learned something well.
61. We know when we have learned things correctly.

Instructional Practices: Task Difficulty (4)

44. I do not have enough time to do my work for this class.
66. Some of the things the teacher wants us to learn are just too hard.
73. I have trouble reading the books and other materials in this class.
92. The teacher gives me too much work to do in this class.

Instructional Practices: Organization (11)

28. We know exactly what we have to get done in this class.
52. We know why the things we are learning in this class are important.
57. The grades or marks I get in this class help me to learn better.
-58. We don't know what the teacher is trying to get us to learn in this class.
-72. Many students don't know what they're supposed to be doing during class.
-76. This class is disorganized.
-78. The grades or marks I get in this class have nothing to do with what I really know.
-79. We have to learn things without knowing why.
93. Students know the goals of this class.
106. Things are well planned in this class.
113. Our teacher gives us good reasons for learning in this class.

APPENDIX B

SUPPLEMENTARY FINDINGS

The tables in this appendix are relevant to the discussion in Chapter V. The first set of tables includes standard deviations, numbers of cases, percentages of cases, and univariate F-ratios (a measure of the significance of the zero-order relationship). The second set of tables contains zero-order Correlation coefficients.

Summary Statistics for Senior High "High," "Average," and "Low" Track English Classes and Total Sample by Curricular Content Dependent Variables

Variables	Groups						Total		Univariate F Ratio
	High		Average		Low				
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	
Teachers' Estimates—Time on Instruction	9.06	2.11	8.79	1.55	7.90	1.38	8.69	1.72	1.59
Students' Estimates—Time on Instruction	2.85	0.13	2.68	0.23	2.46	0.30	2.68	0.26	10.08*
Observed Time on Instruction	79.96	13.31	71.37	14.70	72.48	13.87	74.09	14.40	1.96
Observed Non-Instructional Activity	5.70	10.72	7.39	9.26	4.53	4.68	6.33	8.96	0.45
Expected Homework Time	2.50	0.52	2.29	0.85	1.18	0.40	2.13	0.84	13.09*
Topics of Instruction	4.25	0.68	3.50	1.10	1.91	1.04	3.40	1.27	18.53*
Cognitive Levels of Skills	3.88	0.96	3.39	0.88	2.36	0.67	3.33	1.00	10.10*
Number of Cases	16		28		11		55		
Percentage of Cases	29%		51%		20%		100%		

* Significant at the .05 level (2 and 52 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track English Classes and Total Sample by Curricular Content Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Teachers' Estimates—Time on Instruction	9.42	0.67	8.58	1.51	8.27	1.39	8.72	1.3[illegible]	2.90
Students' Estimates—Time on Instruction	2.74	0.24	2.60	0.22	2.44	0.29	2.58	0.28	4.65*
Observed Time on Instruction	81.95	19.33	78.30	14.14	77.49	18.51	79.11	17.20	0.23
Observed Non-Instructional Activity	1.65	3.25	2.54	4.04	1.81	3.31	1.98	3.46	0.21
Expected Homework Time	2.25	0.75	2.33	0.49	1.60	0.51	2.03	0.67	6.41*
Topics of Instruction	3.50	0.67	2.58	1.00	1.27	0.46	2.36	1.18	32.59*
Cognitive Levels of Skills	3.17	0.72	2.67	1.07	1.40	0.83	2.33	1.15	14.65*
Number of Cases	12		12		15		39		
Percentage of Cases	31%		31%		38%		100%		

* Significant at the .05 level (2 and 36 degrees of freedom)

Summary Statistics for all Secondary "High," "Average," and "Low" Track English Classes and Total Sample by Curricular Content Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Teachers' Estimates—Time on Instruction	9.21	1.64	8.72	1.52	8.11	1.36	8.70	1.56	3.55*
Students' Estimates—Time on Instruction	2.80	0.19	2.65	0.23	2.44	0.29	2.64	0.27	15.38*
Observed Time on Instruction	80.81	15.86	73.44	14.71	75.37	16.59	76.17	15.74	1.88
Observed Non-Instructional Activity	3.96	8.50	5.93	8.31	2.96	4.10	4.53	7.49	1.37
Expected Homework Time	2.39	0.63	2.30	0.76	1.42	0.50	2.09	0.77	18.34*
Topics of Instruction	3.93	0.77	3.23	1.14	1.54	0.81	2.97	1.33	44.58*
Cognitive Levels of Skills	3.57	0.92	3.18	0.98	1.81	0.90	2.91	1.17	26.31*
Number of Cases	28		40		26		94		
Percentage of Cases	30%		42%		28%		100%		

* Significant at the .05 level (2 and 91 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track Math Classes and Total Sample by Curricular Content Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	F Ratio *
Teachers' Estimates-- Time on Instruction	9.09	1.58	7.72	2.27	6.76	2.61	7.95	2.33	5.63*
Students' Estimates-- Time on Instruction	2.92	0.10	2.68	0.26	2.54	0.23	2.73	0.26	15.63*
Observed Time on Instruction	83.27	10.56	80.28	16.99	73.63	11.36	79.39	13.55	2.58
Observed Non-Instructional Activity	4.38	6.06	8.29	8.98	8.13	7.56	6.78	7.64	1.63
Expected Homework Time	2.48	0.51	2.06	0.42	1.94	0.66	2.18	0.58	5.42*
Topics of Instruction	4.95	0.22	4.22	1.31	1.88	1.05	3.79	1.60	51.86*
Cognitive Levels of Skills	2.95	0.21	3.00	0.59	2.94	0.24	2.96	0.38	0.12
Number of Cases	21		18		17		56		
Percentage of Cases	38%		32%		30%		100%		

* Significant at the .05 level (2 and 53 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track Math Classes and Total Sample by Curricular Content Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio *
Teachers' Estimates--Time on Instruction	8.24	1.35	8.23	2.01	8.08	2.11	8.19	1.76	0.30
Students' Estimates--Time on Instruction	2.81	0.11	2.54	0.31	2.51	0.22	2.64	0.26	8.72*
Observed Time on Instruction	79.05	12.55	78.55	8.92	83.48	9.41	80.16	10.63	0.82
Observed Non-Instructional Activity	2.98	4.99	4.32	6.90	2.99	3.44	3.40	5.22	0.29
Expected Homework Time	2.06	0.66	2.08	0.28	1.83	0.58	2.00	0.54	0.79
Topics of Instruction	3.41	1.18	3.00	1.54	1.33	0.65	2.69	1.35	14.67*
Cognitive Levels of Skills	2.53	0.72	2.62	0.77	2.08	1.00	2.43	0.83	1.53
Number of Cases	17		13		12		42		
Percentage of Cases	40%		31%		29%		100%		

Summary Statistics for All Secondary "High," "Average," and "Low" Track Math Classes and Total Sample by Curricular Content Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Teachers' Estimates--Time on Instruction	8.71	1.52	7.94	2.14	7.31	2.47	8.05	2.10	3.96*
Students' Estimates--Time on Instruction	2.87	0.12	2.62	0.29	2.53	0.24	2.69	0.26	22.61*
Observed Time on Instruction	81.39	11.53	79.56	14.00	77.71	11.53	79.72	12.33	0.73
Observed Non-Instructional Activity	3.76	5.58	6.63	8.29	6.00	6.63	5.33	6.81	1.70
Expected Homework Time	2.29	0.61	2.06	0.36	1.90	0.62	2.10	0.57	4.35*
Topics of Instruction	4.26	1.11	3.71	1.37	1.66	0.94	3.32	1.59	44.71*
Cognitive Levels of Skills	2.76	0.52	2.84	0.69	2.57	0.78	2.73	0.67	1.14
Number of Cases	38		31		29		98		
Percentage of Cases	39%		32%		30%		100%		

* Significant at the .05 level (2 and 95 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track English Classes and Total Sample by Instructional Practices Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Clarity									
Verbal Clarity	3.16	0.36	3.11	0.32	3.18	0.35	3.14	0.33	0.17
Organizational Clarity	3.06	0.26	2.87	0.31	2.83	0.28	2.91	0.30	3.02
Teacher tells what is to be learned	3.29	0.29	3.04	0.38	2.91	0.44	3.09	0.39	3.88*
Everyone knows what may be done	3.24	0.21	3.00	0.21	2.98	0.23	3.07	0.24	7.74*
Enthusiasm									
Teacher Enthusiasm	3.51	0.30	3.42	0.27	3.28	0.37	3.42	0.30	2.00
Variability									
Teacher willing to try different ways	2.96	0.52	2.73	0.50	2.99	0.37	2.85	0.49	1.64
Var. of Materials (teacher)	6.56	1.15	6.27	1.70	7.00	1.84	6.51	1.59	0.81
Var. of Materials (Student)	4.06	1.57	4.18	1.44	5.36	1.43	4.38	1.53	3.07
Var. of Groupings (Observed)	1.83	0.47	1.67	0.49	2.30	0.71	1.84	0.58	5.63*
Use of Supp.Materials (Observed)	0.16	0.38	0.65	2.21	1.57	4.83	0.69	2.65	0.93
Var. of Activities (Teacher)	8.50	1.75	8.86	2.09	7.91	1.81	8.56	1.94	0.95
Var. of Activities (Student)	7.06	1.69	7.89	1.17	8.55	1.04	7.82	1.40	4.33*
Var. of Activities (Observed)	1.96	1.03	1.59	0.65	2.30	1.00	1.84	0.88	2.96
Number of Cases	16		28		11		55		
Percentage of Cases	29%		51%		20%		100%		

*Significant at .05 level (2 and 52 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track English Classes and Total Sample by Instructional Practices Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Clarity									
Verbal Clarity	3.25	0.38	3.21	0.18	2.97	0.33	3.13	0.33	3.38*
Organizational Clarity	3.14	0.32	3.02	0.15	2.75	0.13	2.95	0.27	12.14*
Teacher tells what is to be learned	3.35	0.37	3.14	0.32	3.01	0.42	3.15	0.39	2.75
Everyone knows what may be done	3.17	0.20	3.01	0.15	2.87	0.38	3.00	0.30	4.16*
Enthusiasm									
Teacher Enthusiasm	3.42	0.34	3.36	0.25	3.06	0.26	3.26	0.32	6.23*
Variability									
Teacher willing to try different ways	2.97	0.50	3.06	0.27	2.84	0.26	2.95	0.36	2.48
Var.of Materials (Teacher)	7.25	1.54	7.83	1.64	8.60	0.99	7.95	1.47	3.20*
Var. of Materials (Student)	4.92	1.73	5.00	2.04	7.47	1.30	5.92	2.06	10.19*
Var. of Groupings (Observed)	1.83	0.39	1.94	0.65	2.31	0.75	2.05	0.65	2.18
Use of Supp. Materials (observed)	1.70	3.32	1.83	3.77	2.09	4.52	1.89	3.86	0.34
Var. of Activities (Teacher)	9.08	1.98	9.50	1.68	9.20	2.14	9.26	1.92	0.15
Var. of Activities (Student)	9.08	1.24	8.92	1.62	8.80	1.93	8.92	1.61	0.88
Var. of Activities (Observed)	1.56	0.84	1.78	0.90	1.84	0.56	1.73	0.76	0.50
Number of Cases	12		12		15		39		
Percentage of Cases	31%		31%		38%		100%		

* Significant at .05 level (2 and 36 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track English Classes and Total Sample by Instructional Practices Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Clarity									
Verbal Clarity	3.20	0.37	3.14	0.28	3.06	0.35	3.14	0.33	1.34
Organisational Clarity	3.07	0.29	2.91	0.28	2.78	0.21	2.93	0.29	9.81*
Teacher tells what is to be learned	3.32	0.32	3.07	0.36	2.97	0.42	3.16	0.39	6.55*
Everyone knows what may be done	3.21	0.20	3.01	0.19	2.91	0.32	3.04	0.26	11.43*
Enthusiasm									
Teacher Enthusiasm	3.47	0.31	3.40	0.26	3.15	0.32	3.35	0.32	8.74*
Variability									
Teacher willing to try different things	2.96	0.50	2.83	0.46	2.91	0.31	2.89	0.44	0.70
Var. of Materials (Teacher)	6.86	1.35	6.75	1.81	7.92	1.60	7.11	1.69	4.57*
Var. of Materials (Student)	4.43	1.67	4.43	1.67	6.58	1.70	5.02	1.92	15.52*
Var. of Groupings (Observed)	1.83	0.43	1.75	0.55	2.31	0.72	1.93	0.61	8.10*
Use of Supp.Materials (Observed)	0.82	2.27	1.01	2.77	1.87	4.57	1.19	3.24	0.81
Var. of Activities (Teacher)	8.75	1.84	9.05	1.97	8.65	2.08	8.85	1.95	0.37
Var. of Activities (Student)	7.93	1.80	8.20	1.38	8.69	1.59	8.26	1.59	1.63
Var. of Activities (Observed)	1.79	0.96	1.65	0.73	2.04	0.80	1.80	0.83	1.76
Number of Cases	28		40		26		94		
Percentage of Cases	30%		41%		28%		100%		

* Significant at .05 level (2 and 91 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track Math Classes and Total Sample by Instructional Practices Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	F Ratio*
Clarity									
Verbal Clarity	3.11	0.30	2.93	0.37	3.12	0.26	3.06	0.32	2.15
Organizational Clarity	3.07	0.28	2.77	0.32	2.96	0.19	2.94	0.29	6.02*
Teacher tells what is to be learned	3.12	0.34	2.89	0.40	2.93	0.47	2.99	0.41	1.84
Everyone knows what may be done	3.21	0.31	2.89	0.22	2.96	0.35	3.03	0.32	6.47*
Enthusiasm									
Teacher Enthusiasm	3.54	0.32	3.22	0.29	3.22	0.32	3.36	0.34	6.92*
Variability									
Teacher willing to try different ways	2.97	0.44	2.74	0.41	2.92	0.42	2.88	0.43	1.53
Var. of Materials (Teacher)	4.43	1.91	4.72	2.14	5.76	1.99	4.93	2.05	2.22
Var. of Materials (Student)	2.33	0.86	1.89	0.58	3.41	1.73	2.52	1.28	8.28*
Var. of Grouping (Observed)	1.83	0.83	2.11	0.96	2.45	0.83	2.11	0.90	2.34
Use of Supp. Materials (Observed)	4.44	11.66	2.44	6.24	1.34	4.61	2.85	8.34	0.67
Var. of Activities (Teacher)	6.19	1.47	6.05	1.63	5.24	1.60	5.86	1.59	1.97
Var. of Activities (Student)	4.29	0.78	4.17	0.86	4.18	0.95	4.21	0.85	0.12
Var. of Activities (Observed)	1.52	0.54	1.87	0.49	1.99	0.57	1.78	0.56	4.14*
Number of Cases	21		18		17		56		
Percentage of Cases	38%		32%		30%		100%		

* Significant at .05 level (2 and 53 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track Math Classes and Total Sample by Instructional Practices Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio*
Clarity									
Verbal Clarity	3.19	0.29	2.99	0.25	3.16	0.21	3.12	0.27	2.31
Organizational Clarity	3.10	0.25	2.78	0.19	2.98	0.14	2.96	0.24	9.13*
Teacher tells what is to be learned	3.13	0.42	2.83	0.72	2.97	0.35	2.99	0.37	2.68
Everyone knows what may be done	3.19	0.32	2.95	0.33	3.05	0.31	3.08	0.33	2.16
Enthusiasm									
Teacher Enthusiasm	3.47	0.30	3.08	0.30	3.30	0.18	3.30	0.31	7.34*
Variability									
Teacher willing to try different ways	3.01	0.42	2.83	0.23	3.23	0.38	3.02	0.38	3.63*
Var. of Materials (Teacher)	4.71	1.96	5.54	1.45	6.83	1.95	5.57	1.98	4.84*
Var. of Materials (Student)	2.82	1.07	3.00	1.15	4.42	2.11	3.33	1.59	4.66*
Var. of Grouping (Observed)	1.91	0.90	1.95	0.89	2.17	0.93	2.00	0.89	0.30
Use of Supp. Materials (Observed)	1.71	4.81	5.81	10.98	1.72	3.66	2.98	7.18	1.49
Var. of Activities (Teacher)	5.94	1.52	5.92	1.85	6.67	1.97	6.14	1.75	0.75
Var. of Activities (Student)	4.47	0.72	4.31	0.48	5.25	1.22	4.64	0.91	4.57*
Var. of Activities (Observed)	1.90	0.47	1.70	0.43	1.78	0.59	1.81	0.49	0.61
Number of Cases	17		13		12		42		
Percentage of Cases	40%		31%		39%		100%		

* Significant at .05 level (2 and 39 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track Math Classes and Total Sample by Instructional Practices Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate *
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Clarity									
Verbal Clarity	3.15	0.29	2.96	0.32	3.14	0.24	3.08	0.30	4.40*
Organisational Clarity	3.08	0.26	2.77	0.27	2.97	0.17	2.95	0.27	14.15*
Teacher tells what is to be learned	3.13	0.37	2.86	0.35	2.95	0.42	2.99	0.39	4.34*
Everyone knows what may be done	3.20	0.31	2.92	0.27	2.99	0.33	3.05	0.33	8.34*
Enthusiasm									
Teacher Enthusiasm	3.51	0.31	3.16	0.30	3.25	0.27	3.32	0.33	12.97*
Variability									
Teacher willing to try different things	2.99	0.43	2.78	0.35	3.05	0.42	2.94	0.41	3.69*
Var. of Materials (Teacher)	4.55	1.91	5.06	1.90	6.21	2.01	5.20	2.04	6.12*
Var. of Materials (Student)	2.55	0.98	2.35	1.02	3.83	1.93	2.87	1.47	10.76*
Var. of grouping (Observed)	1.87	0.85	2.04	0.92	2.33	0.87	2.06	0.89	2.31
Use of Supp.Materials (Observed)	3.22	9.24	3.85	8.57	1.50	4.18	2.91	7.83	0.72
Var. of Activities (Teacher)	6.08	1.48	6.00	1.69	5.83	1.87	5.98	1.66	0.19
Var. of Activities (Student)	4.37	0.75	4.23	0.72	4.62	1.18	4.40	0.89	1.52
Var. of Activities (Observed)	1.69	0.54	1.80	0.46	1.91	0.58	1.79	0.53	1.37
Number of Cases	38		31		29		98		
Percentage of Cases	39%		32%		30%		100%		

Summary Statistics for Senior High "High," "Average," and "Low" Track English Classes and Total Sample by Teacher-Student Relationship and Teacher Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate F Ratio
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	
Teacher Concern	3.33	0.35	3.26	0.41	3.15	0.39	3.26	0.39	0.72
Teacher Punitiveness	1.35	0.21	1.42	0.26	1.65	0.33	1.45	0.28	4.33*
Time on Behavior									
Teacher Estimate	1.37	0.62	1.75	0.84	2.73	1.42	1.84	1.03	7.10*
Student Estimate	1.43	0.29	1.61	0.34	1.86	0.43	1.61	0.37	5.08*
Observed	1.18	1.40	1.43	1.33	2.26	1.50	1.52	1.41	2.12
Positive Teacher Affect (Observed)	0.72	0.93	0.90	0.91	0.86	0.82	0.84	0.89	0.20
Negative Teacher Affect (Observed)	0.68	0.87	0.65	1.04	0.92	1.44	0.71	1.07	0.25
Number of Cases	16		28		11		55		
Percentage of Cases	29%		51%		20%		100%		

* Significant at .05 level (2 and 52 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track English Classes and Total Sample by Teacher-Peer Relationship and Teacher Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	X̄	S	X̄	S	X̄	S	X̄	S	F Ratio
Teacher Concern	3.21	0.46	3.18	0.34	2.91	0.41	3.08	0.42	2.30
Teacher Punitiveness	1.53	0.19	1.58	0.26	1.87	0.31	1.68	0.30	6.93*
Time on Behavior									
Teacher Estimate	1.50	0.52	2.17	0.94	2.27	0.80	2.00	0.83	3.67*
Student Estimate	1.53	0.34	1.89	0.29	1.81	0.33	1.75	0.35	3.99*
Observed	1.34	0.98	2.80	2.54	1.97	2.01	2.03	1.99	1.69
Positive Teacher Affect (Observed)	1.47	1.48	1.40	1.90	0.64	0.62	1.13	1.40	1.53
Negative Teacher Affect (Observed)	0.48	0.52	0.66	0.91	0.41	0.99	0.51	0.83	0.30
Number of Cases	12		12		15		39		
Percentage of Cases	31%		31%		38%		100%		

* Significant at .05 level (2 and 36 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track English Classes and Total Sample by Teacher-Student Relationship and Teacher Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Teacher Concern	3.28	0.40	3.23	0.38	3.01	0.41	3.19	0.41	3.67*
Teacher Punitiveness	1.43	0.21	1.47	0.27	1.78	0.33	1.54	0.31	13.41*
Time on Behavior									
Teacher Estimate	1.43	0.57	1.88	0.88	2.46	1.10	1.90	0.95	9.43*
Student Estimate	1.48	0.31	1.69	0.35	1.83	0.37	1.67	0.37	7.46*
Observed	1.24	1.22	1.84	1.86	2.09	1.78	1.73	1.69	1.89
Positive Teacher Affect (Observed)	1.04	1.23	1.05	1.28	0.73	0.70	0.96	1.13	0.71
Negative Teacher Affect (Observed)	0.59	0.74	0.65	0.99	0.62	1.20	0.63	0.98	0.32
Number of Cases	28		40		26		94		
Percentage of Cases	30%		42%		28%		100%		

* Significant at .05 level (2 and 91 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track Math Classes and Total Sample by Teacher-Student Relationship and Teacher Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio*
Teacher Concern	3.35	0.31	2.97	0.44	3.11	0.30	3.16	0.38	5.48*
Teacher Punitiveness	1.44	0.22	1.50	0.23	1.62	0.29	1.51	0.25	2.68
Time on Behavior									
Teacher Estimate	1.38	0.59	2.50	1.72	2.47	1.12	2.07	1.31	5.47*
Student Estimate	1.31	0.30	1.76	0.41	1.78	0.32	1.60	0.40	11.70*
Observed	0.68	0.69	2.56	3.16	2.31	1.21	1.78	2.10	5.36*
Positive Teacher Affect (Observed)	0.67	0.64	0.50	0.42	0.59	0.80	0.59	0.63	0.35
Negative Teacher Affect (Observed)	0.34	0.44	0.48	0.87	0.55	0.72	0.45	0.68	0.45
Number of Cases	21		18		17		56		
Percentage of Cases	38%		37%		30%		100%		

* Significant at .05 level (2 and 53 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track Math Classes and Total Sample by Teacher-Student Relationship and Teacher Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio*
Teacher Concern	3.25	0.44	2.87	0.39	3.11	0.27	3.09	0.41	3.61*
Teacher Punitiveness	1.51	0.31	1.68	0.27	1.72	0.23	1.62	0.29	2.32
Time on Behavior									
Teacher Estimate	2.12	0.93	2.62	1.85	2.42	1.68	2.36	1.46	0.65
Student Estimate	1.57	0.24	1.90	0.43	1.86	0.30	1.76	0.35	4.59*
Observed	1.57	1.08	2.17	2.41	1.77	1.46	1.81	1.67	0.46
Positive Teacher Affect (Observed)	0.37	0.33	0.27	0.21	1.36	1.12	0.62	0.79	11.16*
Negative Teacher Affect (Observed)	0.33	0.45	0.64	1.08	0.19	0.44	0.39	0.71	1.34
Number of Cases	17		13		12		42		
Percentage of Cases	40%		31%		29%		100%		

* Significant at .05 level (2 and 39 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track Math Classes and Total Sample by Teacher-Student Relationship and Teacher Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate*
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Teacher Concern	3.30	0.37	2.93	0.42	3.11	0.29	3.13	0.39	8.96*
Teacher Punitiveness	1.47	0.27	1.58	0.26	1.66	0.26	1.56	0.27	4.40*
Time on Behavior									
Teacher Estimate	1.71	0.84	2.55	1.75	2.45	1.35	2.19	1.37	4.13*
Student Estimate	1.43	0.30	1.82	0.42	1.81	0.31	1.66	0.39	14.79*
Observed	1.08	0.98	2.40	2.83	2.09	1.32	1.79	1.92	4.83*
Positive Teacher Affect (Observed)	0.54	0.54	0.40	0.36	0.91	1.01	0.61	0.70	4.52*
Negative Teacher Affect (Observed)	0.34	0.44	0.54	0.95	0.40	0.64	0.42	0.69	0.77
Number of Cases	38		31		29		98		
Percentage of Cases	39%		37%		30%		100%		

* Significant at .05 level (2 and 95 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track English Classes and Total Sample by Student-Peer Relationship and Student Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Peer Esteem	3.10	0.13	2.95	0.18	2.98	0.21	3.00	0.18	4.02*
Students are Unfriendly	1.43	0.17	1.50	0.23	1.81	0.36	1.54	0.29	8.76*
Feel Left Out	1.49	0.20	1.59	0.18	1.70	0.31	1.58	0.23	3.22*
Student Competitiveness	2.47	0.42	2.15	0.22	2.35	0.33	2.28	0.34	5.44*
Student Cliqueness	2.56	0.42	2.65	0.30	2.76	0.31	2.65	0.34	1.09
Class Dissonance	1.71	0.24	1.81	0.34	2.28	0.37	1.88	0.38	11.44*
Student Compliance	3.36	0.22	3.26	0.21	3.21	0.23	3.28	0.22	1.79
Student Apathy	1.66	0.30	1.96	0.32	2.09	0.34	1.90	0.36	7.01*
Positive Student Affect (Observed)	0.35	0.48	0.37	0.50	0.16	0.18	0.32	0.45	0.87
Negative Student Affect (Observed)	0.0	0.0	0.07	0.15	0.02	0.05	0.04	0.11	1.73
Number of Cases	16		28		11		55		
Percentage of Cases	29%		51%		20%		100%		

* Significant at .05 level (1 and 52 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track English Classes and Total Sample by Student-Peer Relationship and Student Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Peer Esteem	3.09	0.26	2.95	0.16	2.90	0.28	2.97	0.25	2.26
Students are Unfriendly	1.47	0.31	1.64	0.25	2.05	0.35	1.75	0.39	12.61*
Feel Left Out	1.52	0.20	1.68	0.20	2.02	0.28	1.76	0.32	16.33*
Student Competetiveness	2.40	0.33	2.44	0.15	2.57	0.18	2.48	0.24	2.08
Student Cliqueness	2.62	0.35	2.68	0.22	2.69	0.21	2.66	0.26	0.25
Class Dissonance	1.91	0.46	2.22	0.35	2.40	0.33	2.19	0.42	5.70*
Student Compliance	3.42	0.24	3.34	0.15	3.08	0.21	3.26	0.25	10.50*
Student Apathy	1.77	0.41	1.92	0.22	2.22	0.21	1.99	0.34	8.43*
Positive Student Affect (Observed)	0.82	1.38	0.34	0.60	0.11	0.17	0.40	0.87	2.42
Negative Student Affect (Observed)	0.0	0.0	0.04	0.10	0.14	0.46	0.07	0.29	0.90
Number of Cases	12		12		15		39		
Percentage of Cases	31%		31%		38%		100%		

* Significant at .05 level (2 and 36 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track English Classes and Total Sample by Student-Peer Relationship and Student Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate F Ratio
Variables	X	S	X	S	X	S	$\bar{X}$	S	
Peer Esteem	3.10	0.19	2.95	0.17	2.93	0.25	2.99	0.23	5.82*
Students are Unfriendly	1.45	0.24	1.54	0.24	1.95	0.37	1.63	0.35	24.87*
Feel Left Out	1.50	0.19	1.61	0.19	1.89	0.33	1.65	0.28	18.72*
Student Competitiveness	2.44	0.38	2.34	0.24	2.48	0.27	2.36	0.31	6.25*
Student Cliqueness	2.59	0.38	2.66	0.28	2.72	0.25	2.65	0.31	1.20
Class Dissonance	1.79	0.36	1.93	0.39	2.35	0.34	2.01	0.43	16.78*
Student Compliance	3.38	0.23	3.28	0.19	3.13	0.22	3.27	0.23	9.38*
Student Apathy	1.71	0.35	1.95	0.29	2.17	0.27	1.94	0.35	15.13*
Positive Student Affect (Observed)	0.55	0.98	0.36	0.52	0.13	0.17	0.35	0.65	2.86
Negative Student Affect (Observed)	0.0	0.0	0.06	0.14	0.09	0.35	0.05	0.20	1.44
Number of Cases	28		40		26		94		
Percentage of Cases	30%		42%		28%		100%		

* Significant at .05 level (2 and 91 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track Math Classes and Total Sample by Student-Student Relationship and Student Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	F Ratio*
Peer Esteem	3.17	0.26	2.89	0.28	2.96	0.21	3.02	0.28	6.17*
Students are Unfriendly	1.28	0.22	1.57	0.25	1.60	0.30	1.47	0.29	9.53*
Feel Left Out	1.53	0.20	1.68	0.22	1.67	0.30	1.62	0.25	2.29
Student Competitiveness	2.63	0.41	2.37	0.19	2.33	0.23	2.46	0.33	5.82*
Student Cliqueness	2.40	0.33	2.66	0.23	2.58	0.39	2.58	0.33	3.39*
Class Dissonance	1.58	0.35	2.03	0.42	2.18	0.47	1.91	0.48	11.25*
Student Compliance	3.34	0.29	3.05	0.36	3.25	0.26	3.22	0.32	4.31*
Student Apathy	1.53	0.27	2.11	0.40	2.06	0.31	1.87	0.42	18.49*
Positive Student Affect (Observed)	0.44	0.50	0.17	0.18	0.22	0.29	0.26	0.37	3.35*
Negative Student Affect (Observed)	0.01	0.03	0.04	0.15	0.06	0.13	0.03	0.11	1.25
Number of Cases	21		18		17		56		
Percentage of Cases	38%		32%		30%		100%		

* Significant at .05 level (2 and 53 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track Math Classes and Total Sample by Student-Student Relationship and Student Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate*
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Peer Esteem	3.11	0.20	2.90	0.20	2.94	0.29	3.00	0.24	3.55*
Students are Unfriendly	1.55	0.31	1.77	0.22	1.84	0.39	1.70	0.33	3.53*
Feel Left Out	1.43	0.19	1.72	0.30	1.76	0.20	1.61	0.27	8.83*
Student Competetiveness	2.57	0.20	2.37	0.21	2.70	0.24	2.54	0.25	7.38*
Student Cliqueness	2.78	0.27	2.83	0.23	2.81	0.23	2.80	0.24	0.14
Class Dissonance	2.09	0.51	2.38	0.30	2.41	0.52	2.27	0.47	2.25
Student Compliance	3.46	0.20	3.22	0.28	3.33	0.22	3.35	0.24	4.51*
Student Apathy	1.73	0.26	2.23	0.27	2.13	0.22	2.00	0.34	16.80*
Positive Student Affect (Observed)	0.18	0.33	0.07	0.21	0.17	1.12	0.14	0.79	1.31
Negative Student Affect (Observed)	0.08	0.45	0.13	1.08	0.07	0.44	0.09	0.71	0.50
Number of Cases	17		13		12		42		
Percentage of Cases	40%		31%		29%		100%		

* Significant at .05 level (2 and 39 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track Math Classes and Total Sample by Student-Student Relationship and Student Affect Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	$\bar{X}$	s	F Ratio*
Peer Esteem	3.14	0.24	2.90	0.25	2.96	0.24	3.01	0.26	9.89*
Students are Unfriendly	1.40	0.29	1.65	0.25	1.70	0.36	1.57	0.33	9.90*
Feel Left Out	1.49	0.20	1.70	0.25	1.71	0.26	1.62	0.26	9.42*
Student Competitiveness	2.61	0.33	2.37	0.19	2.48	0.30	2.49	0.30	6.09*
Student Cliqueness	2.57	0.35	2.73	0.24	2.67	0.35	2.65	0.32	2.22
Class Dissonance	1.81	0.50	2.18	0.41	2.27	0.49	2.06	0.51	9.56*
Student Compliance	3.39	0.26	3.12	0.32	3.28	0.24	3.27	0.30	8.18*
Student Apathy	1.62	0.28	2.16	0.35	2.09	0.27	1.93	0.39	32.58*
Positive Student Affect (Observed)	0.33	0.41	0.13	0.15	0.19	0.27	0.22	0.32	3.80*
Negative Student Affect (Observed)	0.04	0.12	0.08	0.17	0.07	0.12	0.06	0.14	0.74
Number of Cases	38		31		29		98		
Percentage of Cases	39%		32%		30%		100%		

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* Significant at .05 level (2 and 95 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track English Classes and Total Sample by Student Involvement Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Active Activities									
Teacher	1.99	0.35	2.03	0.40	1.72	0.23	1.96	0.37	2.88
Student	34.18	11.04	35.86	7.57	32.70	7.32	34.74	8.60	0.57
Observed	18.41	22.66	13.21	11.85	10.68	8.56	14.21	15.32	0.95
Passive Activities									
Teacher	2.54	0.23	2.66	0.39	2.34	0.28	2.56	0.35	3.79*
Student	65.51	11.09	68.73	8.54	69.92	5.54	68.03	8.90	0.97
Observed	52.16	21.44	45.19	13.49	51.19	12.42	48.42	16.07	1.17
Student Direction of Activity (Observed)	0.66	2.64	1.67	4.33	1.75	3.30	1.39	3.68	0.44
Cooperative Learning Groups (Observed)	8.87	15.51	7.57	15.38	6.70	8.46	7.77	14.11	0.80
Student Decision-Making (Student)	2.20	0.31	2.18	0.35	2.29	0.34	2.20	0.33	0.45
Locus of Decision-Making (Observed)	1.19	0.28	1.09	0.11	1.24	0.35	1.15	0.23	2.22
Open-Ended Questions	1.52	2.35	0.95	1.38	0.77	1.72	1.08	1.77	0.73
Observed Active Student Participation	3.43	0.61	3.42	0.53	3.17	0.54	3.37	0.56	0.95
Observed Student Off-Task Behavior	1.74	2.16	3.02	3.65	4.99	5.22	3.04	3.78	2.54
Number of Cases	16		28		11		55		
Percentage of Cases	29%		51%		20%		100%		

* Significant at .05 level (2 and 52 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track English Classes and Total Sample by Student Involvement Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate F Ratio
Variables	X̄	S	X̄	S	X̄	S	X̄	S	
Active Activities									
Teacher	2.15	0.49	2.15	0.46	1.87	0.35	2.04	0.44	1.96
Student	44.15	13.21	41.12	13.58	40.59	15.05	41.85	13.78	0.23
Observed	19.03	24.68	11.35	16.12	6.54	6.86	11.87	17.22	1.84
Passive Activities									
Teacher	2.65	0.49	2.82	0.32	2.61	0.27	2.69	0.37	1.73
Student	81.32	9.48	78.54	7.20	71.17	8.89	76.56	9.49	5.10*
Observed	54.40	21.73	53.95	16.03	62.41	16.98	57.34	18.27	0.94
Student Direction of Activity (Observed)	2.59	5.26	0.0	0.0	0.0	0.0	0.80	3.05	3.28*
Cooperative Learning Groups (Observed)	9.36	14.87	2.60	5.01	8.33	11.01	6.89	11.16	1.33
Student Decision-Making (Student)	2.19	0.44	2.14	0.18	2.32	0.25	2.22	0.31	1.31
Locus of Decision-Making (Observed)	1.08	0.14	1.10	0.10	1.22	0.17	1.14	0.15	3.63*
Open-Ended Questions	0.97	1.36	0.66	1.85	0.61	0.92	0.74	1.04	0.44
Observed Active Student Participation	3.75	0.40	3.65	0.33	3.71	0.31	3.71	0.34	0.24
Observed Student Off-Task Behavior	2.15	2.38	1.74	2.49	2.52	3.62	2.17	2.89	0.23
Number of Cases	12		12		15		39		
Percentage of Cases	31%		31%		38%		100%		

* Significant at .05 level (2 and 36 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track English Classes and Total Sample by Student Involvement Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Active Activities									
Teacher	2.06	0.42	2.06	0.42	1.81	0.30	1.99	0.40	3.99*
Student	38.45	12.81	37.44	9.88	37.25	12.81	37.69	11.53	0.87
Observed	18.67	23.10	12.65	13.08	8.29	7.75	13.24	16.09	2.96
Passive Activities									
Teacher	2.59	0.36	2.71	0.37	2.49	0.30	2.61	0.36	2.94
Student	72.29	12.98	71.67	9.27	70.64	7.55	71.57	10.03	0.18
Observed	53.12	21.19	47.82	14.66	57.66	15.97	52.12	17.49	2.65
Student Direction of Activity (Observed)	1.49	4.01	1.17	3.69	0.74	2.27	1.14	3.44	0.31
Cooperative Learning Groups (Observed)	9.08	14.96	6.08	13.27	7.64	9.86	7.41	12.91	0.45
Student Decision-Making (Student)	2.19	0.36	2.16	0.31	2.31	0.29	2.21	0.32	1.66
Locus of Decision-Making (Observed)	1.15	0.24	1.09	0.10	1.23	0.25	1.15	0.20	3.83*
Open-Ended Questions	1.29	1.98	0.86	1.24	0.68	1.29	0.94	1.51	1.18
Observed Active Student Participation	3.57	0.55	3.49	0.49	3.48	0.50	3.51	0.50	0.24
Observed Student Off-Task Behavior	1.92	2.22	2.64	2.37	3.57	4.45	2.68	3.45	1.57
Number of Cases	28		40		26		94		
Percentage of Cases	30%		42%		28%		100%		

* Significant at .05 level (2 and 91 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track Math Classes and Total Sample by Student Involvement Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Active Activities									
Teacher	1.92	0.47	1.71	0.38	1.63	0.42	1.76	0.44	2.29
Student	28.55	9.43	21.04	8.67	21.96	9.12	24.14	9.58	4.00*
Observed	5.53	7.95	3.61	6.26	6.41	10.87	5.18	8.41	0.50
Passive Activities									
Teacher	2.61	0.31	2.57	0.32	2.48	0.30	2.56	0.31	0.80
Student	66.11	4.71	64.93	5.17	62.48	7.66	64.63	5.98	1.82
Observed	64.08	19.88	61.52	17.15	58.28	10.65	61.49	16.53	0.57
Student Direction of Activity (Observed)	1.35	3.19	0.99	2.28	1.10	2.71	1.16	2.74	0.85
Cooperative Learning Groups (Observed)	7.75	11.71	10.52	12.88	8.38	11.51	8.83	11.88	0.27
Student Decision-Making (Student)	2.12	0.23	2.02	0.24	2.12	0.25	2.09	0.24	0.95
Locus of Decision-Making (Observed)	1.11	0.16	1.13	0.14	1.20	0.28	1.15	0.20	1.04
Open-Ended Questions	0.13	0.24	0.15	0.29	0.13	0.27	0.13	0.26	0.26
Observed Active Student Participation	3.48	0.56	3.09	0.70	3.24	0.64	3.28	0.64	1.88
Observed Student Off-Task Behavior	0.85	1.76	5.21	4.98	5.23	5.71	3.58	4.78	6.60*
Number of Cases	21		18		17		56		
Percentage of Cases	38%		32%		30%		100%		

* Significant at .05 level (2 and 53 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track Math Classes and Total Sample by Student Involvement Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Active Activities									
Teacher	1.81	0.34	1.63	0.36	1.98	0.59	1.80	0.44	2.01
Student	26.99	7.88	19.49	5.48	29.25	10.00	25.32	8.73	5.36*
Observed	4.89	7.64	6.82	8.99	4.16	5.44	5.28	7.45	0.42
Passive Activities									
Teacher	2.53	0.25	2.55	0.31	2.77	0.50	2.61	0.36	1.78
Student	68.51	4.29	65.50	4.66	69.70	7.67	67.92	5.68	1.95
Observed	66.95	14.29	51.69	14.35	60.42	15.20	60.36	15.61	4.05*
Student Direction of Activity (Observed)	0.0	0.0	2.14	7.12	0.0	0.0	0.66	4.29	1.12
Cooperative Learning Groups (Observed)	6.60	13.68	11.14	18.20	9.75	15.81	8.90	15.53	0.33
Student Decision-Making (Student)	2.00	0.26	1.96	0.23	2.20	0.21	2.04	0.25	3.60*
Locus of Decision-Making (Observed)	1.08	0.17	1.04	0.09	1.11	0.18	1.08	0.15	0.81
Open-Ended Questions	0.18	0.35	0.07	0.16	0.24	0.45	0.17	0.34	0.79
Observed Active Student Participation	3.74	0.42	3.39	0.46	3.35	0.54	3.52	0.49	3.15*
Observed Student Off-Task Behavior	1.44	2.43	2.49	3.69	3.10	4.01	2.24	3.33	0.92
Number of Cases	17		13		12		42		
Percentage of Cases	40%		31%		29%		100%		

* Significant at .05 level (2 and 39 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track Math Classes and Total Sample by Student Involvement Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Active Activities									
Teacher	1.87	0.41	1.68	0.37	1.78	0.52	1.78	0.44	1.65
Student	27.85	8.69	20.39	7.43	24.98	10.01	24.64	9.20	6.25*
Observed	65.36	7.72	57.39	7.56	59.16	8.97	61.01	7.98	0.32
Passive Activities									
Teacher	2.57	0.28	2.56	0.31	2.60	0.41	2.58	0.33	0.10
Student	67.18	4.63	65.17	4.89	65.47	8.35	66.04	6.05	1.14
Observed	65.36	17.43	57.39	16.53	59.16	12.52	61.01	16.07	2.44
Student Direction of Activity (Observed)	0.74	2.44	1.47	5.21	0.64	2.12	0.95	3.48	0.52
Cooperative Learning Groups (Observed)	7.23	12.46	10.78	15.05	8.94	13.21	8.86	13.49	0.59
Student Decision-Making (Student)	2.07	0.25	2.00	0.23	2.15	0.23	2.07	0.24	3.10*
Locus of Decision-Making (Observed)	1.10	0.16	1.09	0.13	1.17	0.24	1.12	0.18	1.52
Open-Ended Questions	0.15	0.29	0.16	0.25	0.17	0.35	0.15	0.30	0.30
Observed Active Student Participation	3.60	0.51	3.21	0.62	3.29	0.59	3.38	0.59	4.35*
Observed Student Off-Task Behavior	1.12	2.08	4.07	4.62	4.35	5.11	3.01	4.25	6.93*
Number of Cases	38		31		29		98		
Percentage of Cases	39%		32%		30%		100%		

* Significant at .05 level (2 and 95 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track English Classes and Total Sample by Student Attitude Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate F Ratio*
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	
Grading of the School	3.59	0.45	3.37	0.46	3.48	0.63	3.46	0.50	1.19
What I am Learning is interesting/boring	2.97	0.52	2.83	0.45	2.90	0.48	2.89	0.48	.05
Like Subject	3.03	0.25	2.93	0.36	2.96	0.39	2.96	0.34	0.44
Subject is important	3.70	0.13	3.63	0.22	3.53	0.31	3.63	0.22	2.19
Student Satisfaction	2.90	0.42	2.77	0.39	2.60	0.32	2.78	0.39	1.96
Aspirations	4.36	0.68	3.83	0.71	3.75	0.47	3.85	0.77	12.13*
Aspirations-- % "don't know"	7.39	4.43	8.13	6.61	5.97	7.51	7.48	6.20	0.52
General Self-concept	2.76	0.16	2.70	0.17	2.60	0.17	2.70	0.18	3.27*
Academic Self-concept	2.90	0.16	2.77	0.16	2.60	0.20	2.78	0.20	10.97*
Peer Self-concept	3.10	0.10	2.99	0.16	3.04	0.19	3.03	0.16	2.81
Number of Cases	18		31		12		61		
Percentage of Cases	30%		51%		20%		100%		

* Significant at the .05 level (2 and 58 degrees of freedom)

5

Summary Statistics for Junior High "High," "Average," and "Low" Track English Classes and Total Sample by Student Attitude Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio*
Grading of the School	3.80	0.40	3.39	0.52	3.60	0.72	3.60	0.58	1.98
What I am learning is interesting/boring	2.88	0.64	2.80	0.28	2.72	0.41	2.80	0.46	0.49
Like Subject	2.90	0.50	2.92	0.23	2.93	0.44	2.92	0.40	0.18
Subject is important	3.57	0.32	3.63	0.20	3.60	0.24	3.60	0.26	0.20
Student Satisfaction	2.84	0.54	2.85	0.26	2.72	0.24	2.80	0.37	0.60
Aspirations	4.13	0.55	3.70	0.12	3.49	0.63	3.77	0.68	4.26*
Aspirations-- % "don't know"	9.55	7.15	8.32	6.94	13.20	15.79	10.46	10.95	0.87
General Self-concept	2.60	0.18	2.57	0.11	2.44	0.12	2.54	0.15	6.47*
Academic Self-concept	3.08	0.18	2.89	0.21	2.82	0.19	2.93	0.22	7.69*
Peer Self-concept	2.99	0.12	2.94	0.11	2.96	0.16	2.96	0.13	0.57
Number of Cases	16		15		17		48		
Percentage of Cases	33%		31%		35%		100%		

* Significant at the .05 level (2 and 45 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track English Classes and Total Sample by Student Attitude Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Grading of the School	3.69	0.44	3.36	0.48	3.55	0.68	3.52	0.54	3.55*
What I am learning is interesting/boring	2.93	0.57	2.82	0.40	2.80	0.44	2.85	0.47	.78
Like Subject	2.97	0.39	2.93	0.32	2.94	0.42	2.94	0.37	0.11
Subject is important	3.64	0.25	3.63	0.21	3.57	0.27	3.62	0.24	0.76
Student Satisfaction	2.85	0.48	2.71	0.36	2.75	0.27	2.76	0.38	1.33
Aspirations	4.25	0.62	3.79	0.71	3.35	0.58	3.82	0.73	15.07*
Aspirations-- % "don't know"	8.40	0.88	8.19	6.64	[illegible].21	13.33	8.19	8.71	0.52
General Self-concept	2.69	0.18	2.66	0.17	2.51	0.16	2.63	0.18	10.18*
Academic Self-concept	2.98	0.19	2.81	0.19	2.73	0.22	2.84	0.22	13.86*
Peer Self-concept	3.05	0.12	2.98	0.15	2.99	0.17	3.00	0.15	2.50*
Number of Cases	34		46		29		109		
Percentage of Cases	31%		42%		27%		100%		

* Significant at .05 level (2 and 106 degrees of freedom)

Summary Statistics for Senior High "High," "Average," and "Low" Track Math Classes and Total Sample by Student Attitude Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Grading of the School	3.53	0.66	3.24	0.45	3.24	0.48	3.34	0.55	2.06
What I am learning is interesting/boring	3.09	0.42	2.73	0.42	2.83	0.39	2.89	0.43	4.15*
Like Subject	3.34	0.34	2.87	0.29	2.89	0.25	3.04	0.37	16.03*
Subject is important	3.77	0.14	3.65	0.17	3.64	0.19	3.69	0.18	3.85*
Student Satisfaction	2.84	0.35	2.58	0.35	2.76	0.30	2.73	0.35	3.22*
Aspirations	4.63	0.57	3.74	0.76	3.09	0.73	3.88	0.94	28.04*
Aspirations-- % "don't know"	2.57	5.61	8.77	4.76	11.87	12.51	7.50	8.98	6.90*
General Self-concept	2.89	0.17	2.66	0.19	2.61	0.15	2.73	0.21	15.88*
Academic Self-concept	3.03	0.20	2.77	0.17	2.72	0.18	2.85	0.23	17.14*
Peer Self-concept	3.13	0.16	3.04	0.16	2.98	0.18	3.05	0.18	3.87*
Number of Cases	22		20		19		61		
Percentage of Cases	36%		36%		31%		100%		

* Significant at the .05 level (2 and 58 degrees of freedom)

Summary Statistics for Junior High "High," "Average," and "Low" Track Math Classes and Total Sample by Student Attitude Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio*
Grading of the School	3.65	0.51	3.32	0.45	3.38	0.54	3.46	0.51	2.23
What I am learning is interesting/boring	2.97	0.30	2.65	0.26	2.89	0.41	2.84	0.35	4.46*
Like Subject	3.15	0.20	2.79	0.33	3.02	0.32	2.99	0.32	6.99*
Subject is important	3.79	0.11	3.61	0.22	3.65	0.26	3.69	0.21	3.72*
Student Satisfaction	2.88	0.30	2.62	0.25	2.79	0.28	2.77	0.29	3.99*
Aspirations	4.40	0.46	3.64	0.56	3.39	0.57	3.84	0.68	17.59*
Aspirations-- % "don't know"	9.16	5.21	10.60	7.57	10.11	8.41	9.93	6.98	0.19
General Self-concept	2.62	0.17	2.46	0.11	2.49	0.17	2.53	0.16	5.51*
Academic Self-concept	3.16	0.13	2.83	0.13	2.88	0.24	2.96	0.23	18.96*
Peer Self-concept	3.02	0.11	2.94	0.13	2.95	0.24	2.98	0.17	1.21*
Number of Cases	19		17		16		52		
Percentage of Cases	36%		33%		31%		100%		

* Significant at the .05 level (2 and 49 degrees of freedom)

Summary Statistics for All Secondary "High," "Average," and "Low" Track Math Classes and Total Sample by Student Attitude Dependent Variables

	Groups								
	High		Average		Low		Total		Univariate
Variables	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	F Ratio
Grading of the School	3.59	0.59	3.28	0.45	3.30	0.51	3.40	0.54	4.29*
What I am learning is interesting/boring	3.03	0.37	2.70	0.35	2.85	0.39	2.87	0.39	7.90*
Like Subject	3.25	0.30	2.84	0.31	2.95	0.29	3.02	0.35	19.95*
Subject is important	3.78	0.13	3.63	0.19	3.66	0.22	3.69	0.19	7.62*
Student Satisfaction	2.86	0.32	2.60	0.31	2.77	0.29	2.75	0.32	7.13*
Aspirations	4.55	0.53	3.69	0.67	3.23	0.67	3.86	0.83	44.48*
Aspirations-- % "don't know"	5.63	6.31	9.61	6.19	11.07	10.71	8.62	8.18	4.91*
General Self-concept	2.76	0.21	2.57	0.19	2.56	0.17	2.64	0.21	14.40*
Academic Self-concept	3.09	0.18	2.80	0.16	2.80	0.22	2.90	0.23	32.43*
Peer Self-concept	3.08	0.15	3.00	0.16	2.97	0.21	3.02	0.18	4.33*
Number of Cases	41		37		35		113		
Percentage of Cases	36%		33%		31%		100%		

* Significant at the .05 level (2 and 110 degrees of freedom)

Matrix of Pooled Within-Groups Correlation Coefficients (r) for Curricular Content Dependent Variables--All Secondary Tracked English Classes

	1	2	3	4	5	6	7
1. Teachers' Estimates--Time on Instruction	1.00	.45	.14	-.20	-.03	-.03	.14
2. Students' Estimates--Time on Instruction		1.00	-.02	-.07	-.12	.24	.21
3. Observed Time on Instruction			1.00	-.16	-.17	-.04	.06
4. Observed Non-Instructional Activity				1.00	-.02	.05	-.10
5. Expected Homework Time					1.00	.25	.16
6. Topics of Instruction						1.00	.68
7. Cognitive Levels of Skills							1.00

Matrix of Pooled Within-Groups Correlation Coefficients (r) for Curricular Content Dependent Variables--All Secondary Tracked Math Classes

	1	2	3	4	5	6	7
1. Teachers' Estimates--Time on Instruction	1.00	.23	.01	.01	.07	.12	-.26
2. Students' Estimates--Time on Instruction		1.00	.17	-.10	.10	.31	.09
3. Observed Time on Instruction			1.00	-.06	.23	.20	-.05
4. Observed Non-Instructional Activity				1.00	.01	-.06	.11
5. Expected Homework Time					1.00	.24	.37
6. Topics of Instruction						1.00	.30
7. Cognitive Levels of Skills							1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Instructional Practices Dependent Variables--All Secondary Tracked English Classes

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Verbal Clarity	1.00	.75	.46	.36	.61	.70	.09	.18	.19	.00	-.01	.32	.14
2. Organizational Clarity		1.00	.51	.38	.63	.67	.14	.26	.23	.07	-.01	.31	.07
3. Teacher Tells What is to be learned			1.00	.32	.52	-.26	.13	.26	-.03	-.21	.07	.40	-.08
4. Everyone knows what may be done				1.00	.36	.25	.12	.02	.18	.10	.03	.20	-.01
5. Teacher Enthusiasm					1.00	.52	-.07	.04	.11	.08	.03	.17	.02
6. Teacher willing to try different things						1.00	.03	.33	.07	.08	.17	.39	.13
7. Var. of Materials (Teacher)							1.00	.48	.14	.16	.22	.11	-.08
8. Var. of Materials (Student)								1.00	.26	.21	.11	.48	-.10
9. Var. of Groupings (Observed)									1.00	.05	.14	.11	.38
10. Use of Supply Materials										1.00	-.14	.30	-.02
11. Var. of Activities (Teacher)											1.00	.22	-.14
12. Var.of Activities (Student)												1.00	-.01
13. Var. of Activities (Observed													1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Instructional Practices Dependent Variables--All Secondary Tracked Math Classes

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Verbal Clarity	1.00	.80	.37	.54	.61	.57	.05	-.07	.06	.00	-.04	.02	.16
2. Organizational Clarity		1.00	.53	.56	.69	.52	.07	.06	.07	.05	.02	.03	.20
3. Teacher Tells What is to be learned			1.00	.34	.50	.45	.01	-.10	.08	.04	.07	.02	.14
4. Everyone Knows What may be done				1.00	.40	.24	-.02	-.16	.19	.012	.05	-.13	.17
5. Teacher Enthusiasm					1.00	.49	.00	-.13	.15	-.06	.05	-.02	.14
6. Teacher willing to try different things						1.00	.04	.12	.13	.06	-.04	.21	.20
7. Var. of Materials (Teacher)							1.00	.17	-.04	-.04	.55	.12	-.07
8. Var. of Materials (Student)								1.00	-.08	.11	.08	.43	-.02
9. Var. of Grouping (Observed)									1.00	-.04	.04	.12	.50
10. Use of Supplementary Materials										1.00	-.15	.06	-.12
11. Var. of Activities (Teacher)											1.00	.12	.01
12. Var. of Activities (Student)												1.00	-.04
13. Var. of Activities (Observed)													1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Teacher-Student Relationship and Teacher Affect Dependent Variables--All Secondary Tracked English Classes

	1	2	3	4	5	6	7
1. Teacher Concern	1.00	-.60	-.20	-.31	.02	.20	.05
2. Teacher Punitiveness		1.00	.16	.23	.06	-.03	-.02
3. Teacher Estimate--Time on Behavior			1.00	.49	.24	-.04	.11
4. Student Estimate--Time on Behavior				1.00	.39	-.11	-.00
5. Observed Time on Behavior					1.00	.20	.37
6. Positive Teacher Affect						1.00	.28
7. Negative Teacher Affect							1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Teacher-Student Relationship and Teacher Affect Dependent Variables--All Secondary Tracked Math Classes

	1	2	3	4	5	6	7
1. Teacher Concern	1.00	-.59	-.03	-.39	-.25	.04	-.10
2. Teacher Punitiveness		1.00	.12	.32	.04	.10	.12
3. Teacher Estimate--Time on Behavior			1.00	.09	.08	-.12	-.11
4. Student Estimate--Time on Behavior				1.00	.50	-.10	.18
5. Observed Time on Behavior					1.00	-.07	.33
6. Positive Teacher Affect						1.00	.00
7. Negative Teacher Affect							1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Student-Peer Relationship and Student Affect Dependent Variables--All Secondary Tracked English Classes

	1	2	3	4	5	6	7	8	9	10
1. Peer Esteem	1.00	-.07	.17	-.05	-.16	-.23	.37	-.36	.02	-.15
2. Feel Left Out		1.00	.41	.32	.11	.47	-.10	.36	-.07	.15
3. Students are Unfriendly			1.00	.20	.20	.27	-.25	.39	-.05	-.05
4. Student Competiveness				1.00	.22	.34	.05	.01	.12	-.03
5. Student Cliqueness					1.00	.47	-.14	.01	.00	-.08
6. Class Dissonance						1.00	-.21	.54	-.05	.04
7. Student Compliance							1.00	-.41	-.06	-.04
8. Student Apathy								1.00	-.15	.10
9. Positive Student Affect									1.00	-.03
10. Negative Student Affect										1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Student-Student Relationship and Student Affect Dependent Variables--All Secondary Tracked Math Classes

	1	2	3	4	5	6	7	8	9	10
1. Peer Esteem	1.00	.32	.44	.26	.01	-.24	.40	.47	.14	-.24
2. Feel Left Out		1.00	.43	.10	.05	.25	.40	.41	-.06	.18
3. Students are Unfriendly			1.00	.05	.21	.66	.18	.53	-.10	.21
4. Student Competiveness				1.00	.09	.09	.20	-.07	.42	-.01
5. Student Cliqueness					1.00	.45	.01	.35	-.10	.07
6. Class Dissonance						1.00	-.08	.70	-.21	.25
7. Student Compliance							1.00	-.48	.01	-.19
8. Student Apathy								1.00	-.29	.38
9. Positive Student Affect									1.00	-.10
10. Negative Student Affect										1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Student Involvement Dependent Variables--All Secondary Tracked English Classes

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Active Activities (T)	1.00	.35	.04	.45	.15	.05	.07	.09	.15	.08	-.06	.09	-.07
2. Active Activities (S)		1.00	.02	.37	.44	.01	-.06	.07	.19	.11	.04	.33	-.13
3. Active Activities (O)			1.00	.09	-.01	.55	-.14	.06	.01	-.13	.34	.04	-.05
4. Passive Activities (T)				1.00	.45	.08	.04	-.07	-.14	-.11	.13	.10	-.02
5. Passive Activities (S)					1.00	-.02	.17	.07	.02	-.14	-.01	.29	-.03
6. Passive Activities (O)						1.00	-.26	-.05	-.02	.22	-.11	.08	-.05
7. Student Direction							1.00	.25	-.15	-.10	-.15	-.17	.11
8. Cooperative Groups								1.00	-.05	.25	-.16	.07	.07
9. Decision-Making (S)									1.00	.32	.09	.13	.24
10. Decision-Making (O)										1.00	.13	-.21	.08
11. Open-Ended Questions											1.00	.04	-.01
12. Student Participation												1.00	-.17
13. Off-Task Behavior													1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) for Student Involvement Dependent Variables--All Secondary Tracked Math Classes

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Active Activities (T)	1.00	.25	.14	.46	.18	-.23	-.01	-.02	.10	-.01	.23	.04	-.08
2. Active Activities (S)		1.00	.16	.04	.13	.08	.03	-.02	.33	.16	.21	-.05	.01
3. Active Activities (O)			1.00	.01	.11	-.38	.45	.12	-.04	.05	.13	.00	.03
4. Passive Activities (T)				1.00	.15	-.15	-.02	-.16	.10	.00	.21	-.01	-.10
5. Passive Activities (S)					1.00	-.03	-.01	-.04	-.24	-.17	.13	.10	-.29
6. Passive Activities (O)						1.00	-.16	-.01	.19	.54	-.03	.06	.07
7. Student Direction							1.00	.19	.16	.02	.00	.11	-.09
8. Cooperative Groups								1.00	.09	.15	.06	.00	.09
9. Decision-Making (S)									1.00	.31	.05	-.06	.12
10. Decision-Making (O)										1.00	.14	-.04	.14
11. Open-Ended Questions											1.00	.03	-.17
12. Student Participation												1.00	-.41
13. Off-Task Behavior													1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) For Students Attitude Dependent Variables--All Secondary English Classes

	1	2	3	4	5	6	7	8	9	10
1. Grading of School	1.00	.34	.06	.34	.35	.10	.30	.01	.34	-.07
2. Like Subject		1.00	.69	.60	.65	.31	-.09	.12	.26	.22
3. Important Subject			1.00	.40	.36	.40	.42	.20	.26	.37
4. Interesting/ Boring				1.00	.78	.12	-.01	.09	.14	.13
5. Student Satisfaction					1.00	.12	.02	-.06	.19	.13
6. Aspirations						1.00	-.04	.33	.36	.39
7. Aspirations-- % "don't know"							1.00	-.07	.11	-.03
8. General Self-Concept								1.00	.02	.38
9. Academic Self-Concept									1.00	.14
10. Peer Self-Concept										1.00

Matrix of Pooled Within-Group Correlation Coefficients (r) For Student Attitude Dependent Variables--All Secondary Math Classes

		1	2	3	4	5	6	7	8	9	10
1.	Grading of School	1.00	.14	0.0	.24	.34	.14	0.0	-.14	.32	-.12
2.	Like Subject		1.00	.37	.61	.58	.30	-.28	.15	.58	.16
3.	Important Subject			1.00	.33	.21	.34	-.20	.20	.41	.21
4.	Interesting/ Boring				1.00	.80	.36	-.20	.16	.43	.11
5.	Student Satisfaction					1.00	.21	-.08	-.06	.43	.02
6.	Aspirations						1.00	-.01	.35	.28	.19
7.	Aspirations-- % "don't know"							1.00	-.34	-.16	-.15
8.	General Self-Concept								1.00	.12	.45
9.	Academic Self-Concept									1.00	.31
10.	Peer Self-Concept										1.00

APPENDIX C

UNIVARIATE F RATIOS

Student Satisfaction Variables in "High," "Average," and "Low" Track and Heterogeneous Classes in Four Samples

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Univariate F Ratios
Student Satisfaction Variables in
"High," "Average," and "Low" Track and Heterogeneous Classes
in Four Samples

	Sample of Classes			
	English		Math	
Variable	Sr.High	Jr.High	Sr.High	Jr.High
Interesting/Boring	.520	.897	2.593	5.215^{*1}
Likes Subject	2.23	2.470	9.730^{*2}	5.143^{*2}
Subject Important	1.706	2.917^{*3}	2.637	3.173^{*2}
Grading of School	1.040	2.154	1.367	3.619^{*1}
Student Satisfaction	1.124	.989	2.109	3.380^{*1}

[*] Significant at .05 level

[1] Heterogeneous group had highest mean score

[2] Heterogeneous group had second highest mean score

[3] Heterogeneous group had lowest mean score